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AND THE ALLIED SCIENCES

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THE AMERICAN

JOURNAL OF PHARMACY

JULY, 1920

EDITORIAL.

"THE END OF THE LAW IS OBEDIENCE."

In this issue we publish in full the address of Mr. William L. Crounse on "Alcohol: Its Relation to Science and Industry," delivered before the recent meeting of the American Pharmaceutical Association. In this, alcohol is properly defined as the most important raw material used in chemical and pharmaceutical industries and the responsibilities of the pharmacists under the Volstead Act are clearly set forth.

Equal prominence is likewise given to the account of the Annual Meeting of the Missouri Pharmaceutical Association, prepared by Secretary Whelpley. We would direct the special attention of our readers to the following resolution appearing in this record as adopted at that meeting.

"Believing that the government committed a tactical error in wishing the liquor business upon the retail druggist, we, therefore, do resolve, in the interest of law-enforcement and that the high standard of pharmacy may be preserved untarnished to politely but very firmly decline the 'honor,' standing pat on the proposition that liquor should be distributed through the dispensaries owned, operated and controlled by the government."

This stereotyped resolution has probably been offered before every State pharmaceutical association that has so far held its 1920 meeting and in those whose annual conventions are yet to come, a similar resolution emanating from the same source may be expected to appear.

It is only too evident that after all human nature is not very

different now from what it was on that day when Moses, incensed at the perversion of the tribes of Israel toward idolatry, decried: "I looked, and behold, ye had sinned against the Lord your God, and had made you a molten calf; ye had turned aside quickly out of the way which the Lord had commanded you."

It has always been a favorite method of the extremist, whether he be a rank demagogue or a pure sentimentalist to appeal to the emotional in his audience by high sounding phrases and glittering generalities. Pharmacists have been declared to be as prone to follow some "swan leader" that would pervert them from the straight line of professional duty and service as were the Hebrew children prone to listen to the 'enticer to idolatry' and thereby forsake their deliverer the true and living God of their fathers.

The best test of the validity of any proposition is to subject it to deliberate analysis and so we will dissect the several phrases composing this resolution and present the isolated statements along with the undisputed facts in evidence. The initial phrase, as the premiss, asserts: "Believing that the Government committed a tactical error in 'wishing' the liquor business upon the retail druggist." We note here (1st) 'believing' (2nd) that 'the Government committed an error' (3rd) 'wishing' (4th) 'the liquor business' (5th) 'upon the retail druggist.' Each of these integral parts of the phrase are positive statements entirely unsupported and some of these are at variance with the wording of the law.

We will dismiss the first of these, "believing," as a personal privilege, with merely a comment that it is presupposed that a body of self-respecting and thoughtful citizens in giving public expression to a *belief* have given due consideration to the reasons therefore and to the context assigned as the basis for the asserted "believing."

The second, that "the Government committed an error," whether only "tactical" or otherwise; it may be safely stated that "the Government" is carrying out the mandates of the people as expressed by the adoption of the Eighteenth Amendment to the Constitution and the statutes.

There has been no evidence whatever of any "wishing" but quite to the contrary the law is being *deliberately enforced* in accordance with the provisions of the said amendment and statutes and this, it would appear to us, is the duty of "the government."

The term "liquor business" has been universally applied to the

dealing in intoxicating liquors for beverage purposes. It is inconceivable that anywhere in these United States, it should not be recognized that the Eighteenth Amendment *prohibited* the manufacture, sale, transportation, importation or exportation of intoxicating liquors; that this and the Enforcement Act have outlawed "the liquor business." It is incomprehensible that a deliberative body, such as a pharmaceutical association, especially in Missouri, is supposed to be, would now resolute about a business that the will of the people and the laws of the land had outlawed and even more so that they would even suggest that such a disreputable business was to be by the "Government" "wished" "upon the retail druggist."

The Volstead Act recognizes that the use of alcoholic liquors is necessary for the extraction, solution and preservation of medicinal preparations and rightly provides the means by which the druggists may obtain the supplies required for such uses. Further, that at times, certain distilled spirits and wines are considered by the attending physician as a therapeutic necessity and it very carefully prescribes methods by which the physician may issue prescriptions for these in limited quantities and then very rightly *considering that they are medicines directs that these shall be filled only through a pharmacist "duly licensed under the laws of his State to compound and dispense medicine prescribed by a duly licensed physician."* Is it not the legitimate duty of the licensed pharmacist and of no one else to dispense medicines? Is not this the very basic principle that has justified the enactment of pharmacy laws for the protection of the public against promiscuous and incompetent dispensing?

This is an irrefutable statement of the law and the facts and no perversion will justify an assertion or even an intimation that "the Government" is desirous of providing for a continuation of "the liquor business" or of "wishing it upon the retail druggist."

The second clause the resolve "in the interest of law enforcement," is ambiguous and contradictory and inconsistent in that, instead of upholding the law and its enforcement by the procedure prescribed, it proposes an entirely different method than that provided for. In the language of our title, "The end of the Law is obedience." It is the plain duty of every citizen of this Country to respect and obey the laws. The question here is "law enforcement" as stated and it does not minimize the matter in the least to

adopt equivical resolves. The people have spoken by Amendment and Congressional Enactment and their mandates must be obeyed alike by the public officers (the Government) and the citizens so long as these remain the law of the land.

The responsibilities and obligations placed upon *the pharmacists* by the Volstead Act are certainly no greater nor more of a hardship than those imposed by the Harrison Antinarcotic Act. We have italicized the pharmacists because we look upon these acts as recognizing professional pharmacy and that the dispensing of all medicines should be by the licensed pharmacists. We cannot doubt that Congress considered the possibility of establishing dispensaries for the distribution of alcoholic liquors. That the conclusion was adverse to such a method is certain. How far the results of the experiments with State dispensaries and the grave danger of abuse deterred from such an action is not known. However, we do not hesitate to assert that under the provisions of the Volstead Act the danger of illicit distribution of liquors will be lessened continuously and that eventually their legitimate prescribing and dispensing as medicines only will be assured.

Let the pharmacists appreciate that if government dispensaries are necessary for the proper dispensing of prescriptions calling for whiskey or brandy that they will equally be necessary for the dispensing of prescriptions calling for morphine or cocaine. Moreover, that such action is an open and broad aspersion of the professional standing of pharmacists and their right to demand the respect and confidence of the public and that they merit responsibility reposed in their professional integrity by this Law. To decline the responsibility imposed upon pharmacists by the Enforcement Act, could not be considered as declining "the honor" but as shirking a professional responsibility. The discharge of a duty in obedience with the law would appear to us as preserving the standard of pharmacy untarnished and far more so than a captious refusal to do so under the misnomer of "declining an honor."

After all, the Mosaic injunction is a safe and worthy advice for the pharmacists to follow:

"According to the sentence of the law which they shall teach thee, and according to the judgment which they shall tell thee, thou shalt do; thou shalt not decline from the sentence which they shall shew thee, to the right hand, nor to the left." (Deut. 17: 12.)

G. M. B.

REVISED REGULATIONS RELATING TO THE TAX ON TOILET ARTICLES AND PROPRIETARY MEDICINES.

In the June number, we published the preliminary notice of the amended regulations regarding the tax on toilet articles and proprietary medicines and editorially commented upon the same. Under date of June 15th, the Bureau has issued a more extended revision of this regulation and we call the attention of our readers and the trades affected to this later promulgation. It is important that those interested should be well acquainted with the changes in the methods of tax collection made thereby.

The Bureau of Internal Revenue has issued a revised edition of Regulations 51 relating to excise taxes on toilet and medicinal articles under Section 907 of the Revenue Act of 1918. Many important changes have been made in the regulations. Attention is invited to the following which are of particular interest to dealers in the articles taxed under this section:

1. The following paragraphs have been added to Article 5:

"Where a dealer sells toilet water, hair tonics, or other preparations, taxable under Section 907 to a barber for use or sale to patrons, the barber is the consumer within the meaning of the act, and the dealer must affix the necessary proprietary stamps and collect the tax from the purchaser. As to all unstamped articles purchased under certificate, on hand at the time of the promulgation of these regulations, the barber must affix the proper stamp and collect and return the tax when such articles are sold to a customer.

"A dealer, druggist, or person who breaks an original package of a taxable article (1) to use the article or any part thereof in compounding medicines, whether or not on the prescription of a physician, or (2) to dispense any part of the article less than the whole at his soda fountain or place of business, is the consumer within the meaning of the act, and must affix the proper stamps to the original package or container on the basis of the cost to himself, and must himself pay the tax.

"When a dealer, druggist, or person breaks an original package of a taxable article, and sells any part thereof in a separate package or container, as distinguished from dispensing it at his place of business, the purchaser is the consumer and must pay the tax, and the vendor must affix the proper stamps.

"When a dealer, druggist, or person sells a taxable article on a physician's prescription, whether in the original container or not,

the purchaser is the consumer, and the vendor must affix the proper stamps to the container or package in which the article is sold.

"Taxable articles given away as free samples are not subject to tax if a notation is made on the package that the articles is not to be sold for consumption or use, but is a free sample."

2. Article 7 has been rewritten in such a manner that the tax imposed by Section 907 of the act must be computed upon each article sold. Heretofore when one person bought two or more articles at one time, the tax might be computed on the sale as a whole, but a reconsideration of the law showed that this practice was erroneous, and that the tax must be paid upon each article separately.

3. Article 8 formerly held that this tax applied to sales made to the Government, but in the Revised Edition is amended so as to hold that this tax does not attach to articles sold to the United States Government. (This tax is a consumer's tax. But the manufacturer's excise tax under Section 900 applies to sales made to the Government, because that tax is not required to be collected from the consumer.)

4. In Article 9 attention is called to the fact that bay rum, witch-hazel, and shampoo oils and liquids are taxable as toilet preparations: that all toilet soaps, whether medicated or not, are taxable under Section 900, when sold by the manufacturer, and not under Section 907.

5. The following clause is added to Article 14:

"If an article is advertized under a coined word, the exclusive use of which is claimed by one manufacturer or dealer, such coined word may or may not be a trade-mark, but it indicates the distinctive origin of the article and renders the sale thereof taxable, whether it is applied to one or more articles sold by such manufacturer or dealer."

6. The two following paragraphs have been added to Article 16:

"(*e*) Cough drops sold in packages or cartons having the words 'cough drops,' 'cold tablets,' 'throat lozenges,' 'throat pastilles,' 'troches' thereon, or otherwise held out as a remedy or specific, are taxable under Section 907. Cough drops sold in bulk and held out or recommended as a remedy or specific are taxable. Candy cough drops, such as lemon, lime, and hoarhound drops, sold in bulk by the pound or otherwise, and not held out or recommended *in any manner* as a remedy or specific, are not taxable under Section 907, but are taxable as candy under section 900, when sold by the manufacturer, producer, or importer.

(*f*) A preparation, otherwise taxable, is not exempt from tax when it is sold on a physician's prescription, nor when sold in a container upon which the original label does not appear."

7. Paragraph (*b*) of Article 17 has been rewritten so as to bring out the fact that products whose primary or principal use is a food, as distinguished from medicinal preparations used as a remedy or specific, are not taxable even though held out as having incidental remedial properties, unless they contain a recognized drug and are held out as proprietary medicinal preparations, or as remedies, or as specifics.

8. A clause has been added to paragraph (*d*) of Article 17 to the effect that serums, vaccines, antitoxins and salvarsan, when prepared by open formulae and advertised only to the medical profession, with labels which indicate use only by the medical profession, are exempt from tax.

9. Paragraph (*e*) of Article 17 has been rewritten so as to bring out the point that waters, whether medicated or not, produced and sold primarily for use as beverages, although they are held out as having incidental remedial qualities, are taxable as beverages under Section 628, and not as medicinal preparations under Section 907.

10. Articles 24 and 25 have been rewritten in such a manner as to bring out clearly the fact that the tax imposed by Section 907 does not apply to sales made for export; and also, that when articles covered by this section are imported, they are taxable when sold to the consumer in the United States, the same as if they had been manufactured in the United States.

LOYALTY TO AND SERVICE IN ASSOCIATIONS.*

By E. G. Eberle, Ph. M.

Two years ago I chose as a timely topic, "Loyalty to the Country and to Pharmacy." This time my endeavor is to impress upon myself and others, if possible, the duty of loyal service to associations.

We are often discouraged by imperfections without deriving the encouragement for further application, though fully convinced of the wisdom of the actions concerned; enthusiasm is responsive to interest in work. A traveler was admiring a sunset in the Himalayas,

* Read before the Pennsylvania Pharmaceutical Association Harrisburg meeting, 1920.

and remarked that it was a beautiful and wonderful world we were living in; a scientist with him was glad of his opportunity in contributing something, however little, to its completion. There is the difference—some are satisfied with conditions as they are, others apply their experience in making progress. These individuals work into the scheme of affairs according to their attitude; their values are inter-related with those similarly engaged, and their worth to the society or the business they are engaged in is dependent on their connection, their coöperation, just as the value of a piece of property is dependent on the surroundings.

Our life—and this includes all the pursuits of life—is what we make it; we get out of it, individually and collectively, what we put into it in the form of energy. For the ardent and progressive worker there is a just reward of wealth to his mind, invigorated with the love of living and doing for others, as also for the advancement of his business and professional activities.

In the discussion of organization plans for pharmacy Mr. Charles G. Merrell presents the thought relative to coöperative endeavor in this way: "No organization or business will be of real value to the community interests that it is intended to serve unless there be born into it ideals and purposes that are not only beneficial to the drug trade but to our national life as well."

The shaping of these activities is not only responsive to our energies and ideals, but on how we impress the public with our coöperative efforts. It is the life of the worker which puts life into his work; the quality is dependent on whether he uses his knowledge only or gives himself with it; his real value develops when he comes in touch with his fellow-men and works into the scheme of affairs in business and industry, and to further this is one of the great purposes of associations. There is reward in doing good work, but, ultimately, success is evolved from coöperation with our fellows, for our good, their good, and the good of those we serve. The development of individuality is a first step; progress results from its adjustment to the individuality of others. To repeat the points briefly, the individual should know himself, his work, and his fellow workers; to become part of an organization is a duty and a privilege. We have within ourselves the capabilities and powers for making pharmacy and the drug business more nearly as we want them to be if our abilities in that direction are more freely exercised.

Loyalty is the basis of association success; the respect and honor

of the people is responsive to loyalty among associates and in so far as this is departed from there is weaker coöperation; the body is open to attack and fails to secure the support of the public which would otherwise obtain. The preferential honor we show to each other, loyalty to ideals, attachment to our profession, business, associations and institutions which make our progress possible are important factors in upbuilding pharmacy and securing the good will of the people. The lack of friendship for one another, belittling the work and inconsiderately questioning the purposes of others, is not conducive to strength. When a member finds a fault his duty is plain—to join with the others in rectifying it.

Dr. Frank Crane recently said: "If you want heart disease, lie awake of nights and listen to your pulse. If you want any member, gland or organ of your physical frame to go on a strike and begin to act up, give it a good dose of self-consciousness. * * * * * There is no recipe so infallible for giving you the mulligrubs and the moral pip and the spiritual colic as to keep prying into yourself. Suspect your good impulses and they soon will wither and die. Go around in your soul with a dark lantern, like a Sherlock Holmes, and before long all your decent, self-respecting, manly elements will get disgusted and move out."

So it is with associations—unquestionably we should be dissatisfied with some conditions, but dissatisfied in the right spirit. There may be differences of opinion concerning the advisability of bringing together many who have not the association spirit, who are possessed with the thought that in affiliating they are giving instead of receiving; there can be none among members who have grown with their organization, relative to strengthening the bonds that unite its members for better service in the cause for which they are enlisted. It may be unprogressive not to extend an organization to include all similarly engaged, but it is unwise to smother the enthusiasm of faithful workers. It is difficult for most of us to tolerate the opinions of others when our opinions are of a different cast, and yet, in most instances, we show true nobility of character when we do. At times we may be tolerant when we should not be, but this is seldom true in associations like ours. The spirit of fraternity feeds the aspirations of the sincere and faithful; directs cautious judgment; engenders a fellowship which gives joy to co-workers in the success of their fellows, resents the wrongs from man to man and their calling;

prepares the mind and hand in their field of work for better and more extended service.

This paper may seem out of place at an association meeting where all are imbued with the association spirit, but it is an opportunity for conveying a message of fraternity. The world as never before is tending toward the efficiency of men and utilizing brain and energy in perfecting science and industry; in creating a morale among men and nations. To that end pharmaceutical associations have duties of corresponding importance which should be impressed on the individual pharmacists and inculcated in the profession at large. There is no influence for pharmacy more potent and powerful in the accomplishment of good than that of the business and professional men unselfishly banded together for the purpose of promoting the general welfare of pharmacy, when the paramount thought is loyal service. The growth of coöperation makes for the growth and strength of organization; the importance of the work for which the association is established is measured by the public by the existing morale and the degree of coöperation among its members.

THE EXPERIENCE OF A PHARMACIST IN THE WORLD WAR.

By Luther A. Buehler, Phar.B.,

PHILADELPHIA, PA.

Shortly after the outbreak of the war, I enlisted in the Medical Corps, entering that arm of the service for the reason that it is the branch for which a pharmacist is best fitted. University of Pennsylvania Base Hospital Unit 20, the command to which I was attached, was organized as a Red Cross Hospital. We were mustered in at the armory of the First Pennsylvania Cavalry and shortly thereafter the enlisted men were divided into small detachments and despatched to different hospitals throughout the city for instruction. The clinical laboratory detail to which I was attached was sent to the University of Pennsylvania Medical School for a short, intensive course of instruction in bacteriology, parasitology and blood work.

From Philadelphia we went to Camp Merritt, purely an embarkation camp, there going through a series of inspections. We

left Hoboken on the Vaterland, landing at Brest on her maiden voyage into that port. After spending four days at Pontenezen Barracks, in mud and on half rations, we were packed in third-class French coaches; eight men and packs to a compartment, each given a load of bread, a can of corned "willey" and "gold fish" and told to work out our own salvation for the next three days. Chatel Guyon, the village in which we were stationed, is a mountain summer bath resort in the central part of France, about thirty kilometers south of Vichy, the second largest hospital center in the A. E. F. This district of France known as Auvergne, although the center of the lace and wine industry, by reason of its geography is probably the least progressive part of France, and the only part that has never suffered invasion. Oxen are used for dray purposes; what grain they raise is cut with a cradle and on one occasion I saw threshing with a flail.

It may not be inappropriate to say a few words in regard to the French people as we knew them—by living and working with them, learning their peculiarities, their depth, manners and customs. I am certain the impression which the doughboys (who constitute the major portion of an army) received was not representative of France, for their minds became so thoroughly impregnated with the abominable conditions existing in the devastated areas, that they cannot view France and her people in the true light.

The buildings that we took over were hotels that had been occupied by French Colonials. The laboratory personnel consisted of two medical officers; an enlisted man who had considerable experience in serology; another who assisted in conducting post mortems; a third, whose work was confined solely to clinical photography, and myself. Sterilization of glassware, the care of animals and the policing of quarters was done by convalescent patients and German prisoners.

The first five weeks of the entire staff were devoted to the installation of apparatus and carpentry; in the latter the two officers, both majors, pitched in and sawed and planed and hammered with the men in dennims. Up to the signing of the armistice, work seldom ceased at retreat but was of necessity carried far into the hours of the night and early morning.

I might cover briefly the stages a patient passed through before reaching us. Except during a drive, patients are never sent direct from the front to a base, a week generally elapsing before their ar-

rival. When a man is wounded on the field he is picked up by the regimental stretcher bearers and carried to the first-aid dressing station, which may be but a stone's throw to the rear in any available shelter such as a dry shell hole or within the remaining walls of a shattered building. The dressings that are applied are intended primarily to arrest the flow of blood and bind up the wounds sufficiently for the man to be transported to the Field Hospital. This is back of the artillery, just beyond the range of enemy fire. Wounded are then transferred to the Evacuation Hospitals and mobile organizations farther in the rear. These organizations, moving forward or receding with the line, although their facilities are limited, perform every type of operation, among the commoner ones being amputations and transfusions.

Wound bacteriology is a development of the past war and represents the work primarily of the French. Gas gangrene, which was prevalent during our Civil War, ran its course unchecked until the exact nature of the organisms infecting wounds was learned, this being in the second year of the war. With the knowledge that the grave speticemia from war wounds was due primarily to two groups of bacteria—the streptococci and the gas producing—there developed the Carrel-Dakin solution and surgical intervention. Our routine procedure in the culture of wounds was to send to the operating room, empty, sterile, capillary pipettes or sterile swabs immersed in several Mils. of neutral boullion. The pipette was filled or the culture media inoculated with the exudate of the wound during debridement and returned to the laboratory. Five subcultures were subsequently made. The first was dextrose boullion for all aerobes; the second, plain boullion overlaid with a layer of oil, previously boiled and rapidly chilled, for anaerobes; third, dextrose agar, overlaid with oil, to observe colony formation and gas production; fourth, litmus milk, the ideal media for gas producing anaerobes; and fifth, an agar plate of whole defibrinated human blood for hemolytic bacteria. After eight hours of incubation, a report, sufficiently complete to determine the mode of treatment, could be generally sent the ward surgeon.

The flora that wounds present is very great, every organism of the gastro-intestinal tract being represented. The characteristics of a gas infection are the nauseating odor, the formation of bubbles of gas in the exudate upon the application of slight pressure to the surrounding parts, accompanied by a crackling sound. Any ar-

ticulation that the hemolytic streptococcus has invaded may be considered as irretrievably lost and any bone tissue it has touched will for months and years carry traces of the infection. Nasopharyngeal cultures for the hemolytic streptococcus, of the officers, nurses and ward masters, all those having occasion to dress wounds, were taken at frequent intervals.

When the wound no longer discharged freely and there were indications of granulation, smears were taken at intervals of several days to determine the average number of organisms per field. When this figure did not exceed five it was safe to attempt suture, however, under no circumstances should a wound be closed showing the presence of streptococci. We prepared a limited number of autogenous vaccines from wounds. Their use has not been very extensive.

Located among the hills under fairly ideal climatic conditions, our organization was selected as a center or clearing house for gassed patients and tuberculosis suspects. A man who is severely gassed develops into the clinical picture of tuberculosis and the treatment is practically the same. So great was the number of specimens of sputa submitted to the laboratory that we were compelled to limit the number to be examined daily to fifty. Ten specimens of each patient were submitted; if no tubercle bacilli were detected in that time, no further specimens were submitted for thirty days. A positive report automatically placed the patient in Class D—those incapacitated for any further service in the A. E. F.

During the winter we generally had a half dozen or more cases of clinical diphtheria in isolation, none ever proving fatal. Like everywhere, the culture and isolation of carriers is a problem. Three cases developed simultaneously among two hundred Bosche prisoner convalescents who were quartered in a barn. At that time it would have been impossible to take that number of cultures, therefore the only ones cultured were those having inflamed areas in the throat.

Sporadic cases of epidemic cerebro-spinal meningitis developed from time to time, the majority proving fatal. Our routine procedure in the examination of spinal fluid was to make a Pandy test for globulin; a leucocyte and differential leucocyte count; cultures for pneumococci on Löfflers' blood serum; for streptococci on dextrose agar, and for meningococci on dextrose sheep's serum agar. A Wasserman test was also made. The culture of contacts was a much greater problem than in diphtheria, satisfactory cultures being

obtained only when placed in incubator temperature immediately after taking. A case developed at an aviation camp, twenty kilometers to the south of us. It was necessary to transport the 300 men to the laboratory to be cultured.

At this same aviation camp there was an epidemic of Vincent's Angina or as generally termed, Trench Mouth. However, it bears no relation to the trenches, it probably being no more prevalent on the firing line than in the Service of Supply. The lesions which occasionally resemble secondary specific patches are very painful and may be found in any part of the mouth or pharynx. Smears show the presence of a long slender fusiform bacillus and a spiral organism having three to twelve undulations. The latter are best observed in a dark field.

Dysentery was widespread throughout the A. E. F., it being almost as prevalent in the S. O. S. as in the Advance Zone. However, the number of positive cultures and agglutinations was remarkably low. Frequent cultures were made of the water, milk and food supply and the hands of cooks and kitchen police but in only one instance were organisms of the typhoid-colon-dysentery group isolated.

While I have no exact data on the influenza and pneumonia cases in our organization, the number was comparatively small. The several thousand patients and hospital personnel being distributed among some twenty isolated buildings in the hills, coupled with stringent preventative measures, enabled a maintenance of the upper hand and control of the epidemic. The nursing and medical attention were equalled by few civil institutions. These cases involved considerable clinical laboratory work, *viz.*, leucocyte counts, blood cultures and typing of the urine and sputum. White mice were unobtainable for grouping the pneumococcus, therefore the Avery method was employed.

Great difficulty was experienced throughout France with natural amboceptor in guinea pig serum, this condition being met with very seldom by workers here in the States. As high as four consecutive pigs have been killed or bled from the heart, finding that the especial complement was in itself capable of producing hemolysis, therefore rendering it unfit for use in the Wasserman technique generally employed. The inadequate supply of guinea pigs was a great problem, they being furnished by the Bureau of Farms and Gardens of the American Red Cross, located in the Paris district.

The fortunate location of the laboratory in the dispensary and specialty building enabled the attending surgeons personally to use the facilities of the laboratory in many instances. We had the heartiest coöperation and support of the ward surgeons and the extent of the work done reflects their interest in this side of the patients' care and treatment.

AS IT WAS IN 1870.*

By H. V. Arny, Ph.M.

This auspicious occasion, the Golden Anniversary of the oldest State pharmaceutical association from the standpoint of continuous operation gives us the opportunity to rejoice and to remember. The writer is one who believes that the future is built upon the past and while too much delving into history may make a man as dried up as a mummy, enough makes one the better for the delving.

So let us lift the curtains of the past and let us see what the pharmaceutical journals of 1870 said about 1870. As to the New Jersey Pharmaceutical Association we find three references noting the meetings in Newark on Jan. 26, Feb. 17 and 24th and in Trenton on March 24th, when the proposed pharmacy law, following a "model" draft approved at the 1869 meeting of the A. Ph. A. was drawn up and ordered presented at the next session of the legislature. The Proceedings of the American Pharmaceutical Association for 1870 states that at its Baltimore meeting the delegates appointed from the New Jersey Association were Randall Rickey, J. L. De la Cour, Jr., William Rust, E. F. Kelly and Julius Fehr. Of these only the first named was present at the meeting. In that year New Jersey had 28 A. Ph. A. members, seven from Jersey City, three from Camden, two each from Newark, Burlington, Morristown, and one each from Bordentown, Elizabeth, Elizabethport, Hackensack, Hoboken, Madison, Mt. Holly, New Brunswick, Plainfield, South Amboy, Trenton and Vincentown.

This is all of the 1870 references to the New Jersey Pharmaceutical Association, more space being given to the West Virginia and Indiana associations, both of which died after a few years, while our association has lived and grown and flowered even unto this, its Golden Anniversary.

* Read before the New Jersey Pharmaceutical Association, Newark, N. J., June, 1920.

The next important item of news is the Pharmacopoeial Convention of 1870 at which no delegates from New Jersey were present and at which time there were elected to the Committee on Revision the distinguished pharmacists, A. B. Taylor, Maisch, Ebert, J. Faris Moore, Markoe, and Wenzell.

As to colleges, we note that New York had eleven graduates at its commencement, Massachusetts six, the University of Michigan, twenty-eight Ph.C.'s, and Philadelphia, fifty-one Ph.G.'s. We also note that Chicago and Louisville announced the opening of their colleges in the fall of 1870. No published record was noted of other colleges, although several others were in operation.

The pharmacy course at the University of Michigan was then in its first years and was viewed with disapproval by the "old line" colleges. At the A. Ph. A. meeting, in his presidential address, E. H. Sargent of Chicago discussed the matter and stated "a feature complained of and one likely to create trouble hereafter is that a student may be graduated as a Master in Pharmacy without having any experience whatever in the practical work of the shop, thereby unsettling our notions as to what constitutes a pharmacist." The phrase "unsettling our notions" is a gem. How many things against which our orators rave as destructive are merely matters "unsettling our notions."

Among the "new medicines" of 1870 we find many papers upon chloral hydrate; phenolsulphonates as "wound dressings" (the word "antiseptic" is met but seldom); phenol and its preparations; eucalyptus, as an antiperiodic; bromoform; and potassium permanganate for snake bite and as a deodorant. One enthusiast gives permanganate internally using raspberry syrup as vehicle! Two new remedies that have not stood the test of time were a tincture of pole cat glands recommended for asthma and the sniffing of fresh sea-weed for hay fever.

Among the "new preparations" of a half century since we find liquid pepsin and pepsin wine (Schaeffer's classic paper on the subject appearing that year) "dragees" and granules; hypodermic solutions; granular, effervescent, magnesium citrate; elixir of iron, quinine and strychnine, which was subject to much criticism; fluidextracts, especially their preparation by percolation, a paper on the subject by Campbell being widely discussed; compound elixir of taraxacum, Candidus recommending it as a vehicle for quinine; glyconin; and cod liver oil creams, the forerunners of our present emulsions.

The popularly prescribed proprietaries of 1870 were evidently Chlorodyne, and Battley's Sedative, judging from the papers discussing imitations of these products. In those days as always, a popular nostrum by imitation, became an accepted galenical, even though there was no National Formulary in which to place it. In that year appeared Chandler's classic report on his analysis of the then popular cosmetics.

In pure science, we find Wormley's classic paper on the alkaloids of gelsemium, with the wonderfully wrought illustrations of his wife, which were so exquisitely delicate that no commercial engraver could do them justice and she learned the art of engraving in order to prepare the plates herself; H. C. Wood's paper on the therapeutics of veratrum alkaloids and lastly an address given by William Hope, before the British Association on the "new germ theory of disease."

In technical science many things now considered as everyday matters, subjects in which millions of capital are now invested, were then considered as new and in their experimental stage. Among these undertakings we find the introduction of beet sugar culture in the United States, the canning of meat, "the tinned Willy" of A. E. F. memories; safety devices in the petroleum business, notably the fixing of the "flash point;" the manufacture of glucose and of artificial ice; the development of natural gas wells in certain sections of New York and at Erie, Pa.; the production of oxygen upon a commercial scale; the financially successful manufacture of aniline dyes, this being the topic of a notable paper by Perkin, the discoverer, in 1856, of mauvein, the first coal-tar dye stuff; and the use of naphthalin as a moth expeller.

And lastly, in the domain of political economy, we find a note that presages good news for us in the "Sweet Bye and Bye." It is stated that by the Law of July 14, 1870 the Internal Revenue War Taxes were to be lightened; that this would mean that the American public would be relieved of the staggering burden of $55,000,000 per annum.

Such is the record of 1870, a record upon which the historian could dilate until his audience was asleep; for almost every topic cited above has much that is interesting to discuss. Surveying the work of 1870, one wonders whether the historian of 1970 talking about 1920 will be able to find as much that has stood as well the test of half a century as have many of the new things of 1870. The year of grace 1870 was a good year and one of the best things accom-

plished that year in a pharmaceutical sense was the founding of this association which we are so proud to honor at this its semi-centennial.

In closing acknowledgments are due to the *Proceedings of the American Pharmaceutical Association*, the AMERICAN JOURNAL OF PHARMACY, *The Druggists Circular*, the *Pharmaceutical Journal and Transactions* and *The Chemist and Druggist* for 1870 from which the facts given in this paper are collated.

THE USE OF DRUGS IN DISEASE.*

BY R. G. ECCLES, M.D.,

BROOKLYN, N. Y.

To how many of your minds has the idea come that pharmaceutical chemistry may be the oldest profession on the earth? The very first of living things must have started as a drug compounder. As soon as the early Protozoa began colonial life—*i. e.*, when they changed from one-celled to multi-celled organisms—they must have exchanged with one another those kinds of drugs now known to physiologists as hormones. With progress upward to the higher forms of life we find, on study, that the exchange of drug commodities increased very greatly. Myriads of substances unknown to the lower forms appear among the higher. Prof. Huxley, the great English biologist, of the end of last century and the beginning of this, declared that of the many millions of organic substances produced by plants and animals they are all combinations of exactly the same elements as are found in "smelling salts" with a trifling amount of mineral substances. Out of these the cells—the primitive pharmacists—produce by their compounding almost the entire array of organic substances found upon your shelves labelled with what laymen look upon as hieroglyphics. While most pharmacists know, in a general way, that the great bulk of their medical supplies are the products of these ancient pharmaceutical chemists few have stopped to consider the fact that their own bodies are miniature drug depots, and, that a quite respectable proportion of the drugs found therein vary but slightly from those they sell every day over

* Read before the Fiftieth Annual Meeting of the New Jersey Pharmaceutical Association, Newark, June 8, 1920.

their counters. The same identical radicals are found in them as are found in the store stock. Your bodies' cells have been licensed by nature, after a proper training in the nature of drugs, to put up the claim that within their membrane walls "Prescriptions are Carefully Compounded." Within their walls they are constantly at work filtering, precipitating, dissolving, macerating, digesting, percolating, oxidizing, reducing, and hydrolyzing. An inventory of the kinds of goods they carry—not ready made, however, but as chemical radicals—would be astonishingly like those found in a Jersey pharmacy. There are in the cells of a normal human body material radicals for the production, on demand, of some very potent compounds but all so cared for as to be quite harmless. Let us, for a moment, look over part of the list as it occurs to us at first thought. There is phosphorus, phosphoric acid and phosphates; iron, iron oxides, sulphides, sulphates and carbonates; sulphur, sulphides, sulphates, sulphites, sulphurous acid, sulphuric acid, and sulphuretted hydrogen; ammonia, ammonium carbonates, sulphides, sulphates, sulphites and phosphates; nitric and nitrous acids with a host of nitrogen salts, t. n. t., nitroglycerin and dynamite; hydrocyanic acid, cyanogen, cyanates and cyanides; iodine, iodides, iodates, and thyroidine; arsenic acid, arsenic, arseniates and arsenides; formaldehyde, formic acid, formates and many polymers of formaldehyde; glycerine and a host of different kinds of tryglycerides; hydrochloric acid, chlorine and a multitude of chlorides; calcium, calcium chlorides, carbonates, sulphates, sulphides, and a multitude of organic calcium compounds; unnumbered substances carrying the benzol ring; fluorine, hydrofluoric acid, and fluorides; alcohol, acetone, acetaldehyde, acetic acid, and acetates of many kinds; citric acid and citrates, oxalic acid and oxalates, oleic acid and oleates; potassium and its salts; sodium and its salts; silicic acid and silicates; copper and its salts; manganese and its salts; etc. In amido-valerianic acid there is the radical for production of valerianic acid and valerianates. The nucleic acid contains the raw materials of phosphorus, phosphoric acid and phosphates, hydrocyanic acid and cyanides, as well as of glucosides. The proteins hold in their structures three amino acids that contain the benzol nucleus, namely phenyl-alanin, tyrosin and tryptophane. These are the mother substances of carbolic acid, benzoic acid, salicylic acid, benzaldehyde, aniline and numerous aromatic substances that perfume our drug stores, to say nothing of malodorous skatol and indol. These three

amino acids are found in every cell of the human body but are particularly abundant in hair and nails, skin and mucous membrane. Every tissue that is exposed to infection by parasites, to an unusual degree, contains more than those not so exposed. They, with cystin and cystein, that contain oxidizable sulphur, are, strange to say, the first of the amino acids released by trypsin in the bacteria laden intestine. There they produce the well-known antiseptic substances named and particularly carbolic acid. There the danger of having the cell-foods—the amino acids—stolen by saprophytes and parasites is greatest for these organisms subsist and fatten, as do the cells, on these amino acids. The oxidation of cystin, by bacteria, produces sulphurous acid an antiseptic about as powerful as carbolic or benzoic acids which it fortifies. It seems as if nature had set a trap for the parasites by which they injure themselves as a cheese-set trap catches mice. Meats, fish, eggs, milk, glutin, and the like, all contain an abundance of these bacteria-inhibitors that only act when being digested or putrified. The odor of skatol in putrid food is evidence of the fact that the bacteria are, by their depradations, producing antiseptic substances to inhibit their activity. The tyrosin is abundant in melanins, the pigments of the negro's *rete mucosum*, the choroid coat of the eye, and in the hair. With the approach of old age the hair turns gray, the nails brittle, and the eye-sight dim because of a shortage of tyrosin and its oxidizing enzyme, tyrosinase. Skin affections also increase as melanin diminishes. The black skin of the negro accompanies his relative immunity from yellow fever, malaria and trypanosome disease as compared with the lack of immunity in white men. Darwin has pointed out that certain skin diseases of animals attack only unpigmented ones, leaving the pigmented untouched, while piebald animals are attacked only on white spots. The shortage of tyrosin seems to be responsible. Millions of years ago the phenylalanin and tyrosin of plants was buried in the ground with the plants that produced them. We now dig them up as coal and the aromatic radicals of these amino acids constitute the antiseptic substances of coal tar. Our beautiful anilin colors and our many new synthetic remedies have come from these. Their antiseptic power have preserved them for all these years from the depradations and ravages of time. We, too, like coal, derive our antiseptic radicals from plants as no animal seems to possess the power to produce them, in spite of the fact that none can live without them.

Among the first of well-known men to proclaim the virtues of these substances, as found in coal tar, was George Berkeley, Bishop of Cloyne, Ireland, who died in 1753. You have all, no doubt heard his prophetic slogan, that has become a household expression: "Westward the course of Empire takes its way." You probably also know that California has honored him by calling the university city of that State by his name. He extolled tar water as a panacea for many ills and this, together with his then unpopular philosophy, brought ridicule upon him. Pope, the great English poet, however, came to his defence and in one poem says:

"Truth's sacred fort the exploded laugh shall win,
And coxcombs vanquish Berkeley with a grin."

His supposedly erratic defense of tar water has been vindicated by modern research and the scriptural claim, that "The leaves of the trees shall be for the healing of the nations," is also vindicated. In these leaves are, and always have been, produced the world's supply of the best known paraciţisides and antiseptics. All of our food proteins are leaf products, so far as they contain phenylalanin and tyrosin, as are also all coal tars, so far as they contain the benzol nucleus. Through this discovery we are but beginning to see that throughout living nature a battle with parasites is going on in which these constitute the implements of war. To successfully vanquish individual diseases we must pursue the methods of nature in the way it holds in abeyance the countless millions of actual and potential disease-producing parasites that menace all other living things. The way she controls disease we must control it, and the weapons she uses against microbes we must use, in order to be successful. Fifty years ago little was known of these invisible foes and a century ago only the larger parasites had any place of recognition in our text-books of medicine. Now we have discovered them to be the constant enemies of every thing that lives. There are now catalogued from 5 to over 20 different kinds for each particular species of plant and of animal. Over sixty have been catalogued and named as enemies of the oak trees. Not a single soul within the hearing of my voice is, at this very minute, free from them. We are all disease carriers. Streptococci, staphylococci, pneumococci, and *Bacillus coli communis* are now waiting upon, and within our bodies, for some favorable opportunity to start disease. They are being held at bay by the antiseptic substances we have named as present in skin and

hair, mucous membrane and nails. A scratch of the skin may inoculate the apparently trifling wound with some virulent kind of streptococcus that starts erysipelas and kills us. We stop its multiplication by a free use of exactly the same radicals as the skin that was removed contained. Our supply, however, most likely came from coal tar in which it had lain for many milleniums since the plants that produced it were menaced by still other kinds of parasites. With the advancement of bacterial and chemical knowledge we are, as such cases show, getting rid of empiricism and discovering broad, general laws of treatment that are as sound to-day as they were when, in the Carboniferous era, these substances were formed. Unfortunately, there are among us a large number of people who measure progress by the yard-stick of their own ignorance. Knowing nothing of discoveries that lie outside of their studies they look, with unfeigned terror, on any kind of change that does not correspond with the opinions of their great grand-dads. They cling to old fads and fancies as they do to truth when they happen to possess it. Not laymen alone are guilty of this folly. It is quite common among physicians and pharmacists as well. We are all loath to give up ideas that we took in when babes and sucklings. We have little of the bravery of the pioneer, and dread, with undisguised fear, every innovation that collides with our early impressions. Medical science has entered a new path since our discovery of the cause of disease and we are now being called upon to remodel our ideas in respect to processes of cure. In the confusion that is resulting from this change we are witnessing an intense conflict of opinion between progressive and sessile, or conservative, minds. Remarkable as is the fact, too, the conservatives have chosen for themselves the title "reformer" as they seek, with might and main, to reform things backward.

Among the new so-called reformers are those who seek to stop the use and manufacture of vaccines, those who oppose research in physiology and therapeutics, calling the processes pursued by the name of vivisection and themselves antivivisectionists, and those who oppose all drug treatment and condemn it as wholesale poisoning. The creed of the latter is that all drugs are "deadly" poisons and all administration of drugs as poisonings. From their point of view poisons are poisons inherently, and it matters not whether the dose is large or small it poisons in proportion to the amount given, the result being cumulative. This, of course, is a very old

notion as well as a very false one, if we can rely on the experimental evidence of modern science. This view, however, has during the last two decades made immense progress in the minds of both laymen and doctors. It has built up a host of therapeutic nihilists, who want to "cast physic to the dogs," and is the foundation inspiration that leads to the doors of the Christian Science church. It was the inspiring thought among those who demanded the abolition of the use of alcohol in every possible form. It is instigating a crusade against the use of tobacco, tea, coffee, etc. Can you not see where this sort of logic is travelling and what the final result is likely to be unless we can educate the mass of voters to alter their views, in some safe degree, in this craze? Should these emotionalists increase in numbers as fast in the next century as they have done in the past what is likely to happen? Would it astonish you much if, when they feel that they are strong enough, they should raise the cry of "Stop Poisoning the Sick?" They would have no trouble in finding, in medical literature, an abundance of thoughtless utterances, of able medical men, to confirm their contention and win votes enough to close drug stores as they have closed saloons. Take for example, these two statements, one from *Bulletin 30* of the Committee of One Hundred on Public Health, p. 88, and the other from a State Board of Health *Bulletin*, as a statement from a leading medical college professor of New York:

"It would scarcely be an exaggeration to say that the first rule of hygiene is to avoid poisons."

"'ALL POISONS:' All of our so-called curative agents (drugs) are poisons and, as a consequence, every one diminishes the vitality of those who take them."

These views are an echo of the time when men conjured out of their inner consciousness what they called truth. An appeal to nature by actual experiment would quickly have convinced them that so far are they from being true that, under proper qualification, the very reverse is declared by nature to be true. Not one of those who make statements like these has any knowledge of what a poison is or why it poisons. It does not occur to them that among the most poisonous substances known to man are such foods as beef, chicken, fish, egg, breads, and proteins generally. Notwithstanding their poisonousness we could not live unless our food contained them. In the *Journal of Infectious Diseases*, Prof. H. G. Wells, of Chicago University, tells us that when egg white, in a perfectly pure condi-

tion, is injected into a rabbit's circulation, in two intermittent doses, very minute amounts kill. He says: "One fifty-thousandth of a cubic centimeter of a solution containing but one-millionth of a gram of protein (egg albumin) sensitizes fatally." (Oct. 20, 1908, p. 456.) That certainly beats strychnine. When these food substances are taken by the mouth the digestive fluids convert them into amino acids that are perfectly harmless. If they enter the circulation partly digested fatal results occur from what is technically known as anaphylaxis. It is now believed that all the various symptoms of different kinds of diseases are due to the anaphylactic poisoning of the body substances by the dead parasites that are being digested in the blood stream. A poison is, so far as we at present know, a substance that has an affinity for some of a cell's molecules and that by union with such molecules produces fatal disturbances in metabolism. The cells are all surrounded by specific membranes composed, as now believed, of protein-like substances. Injury to these, by union with chemicals that damage their function, alters their semi-permeability and leads to cell-death. Egg-white is broken up in the circulation into relatively large molecules of what we may call polypeptids and these have different affinities for different cells but are too large in size to take a proper place in metabolic changes. They act like a monkey wrench thrown between the cog-wheels of a machine. Meat, when partly broken up, has an affinity for a different set of cells from that chosen by egg-white fragments. Fish has still another set of such affinities. The proteins of microbes have, under the same circumstances, still other attractions for different cells and each kind of microbe poisons, with its protein fragments, different kinds of body cells. Hence different diseases display different symptoms. These microbe proteins, so far as we know, behave, when fully digested, exactly as do meats, fish, and eggs—they nourish our bodies. Only at a certain stage of partial digestion are they poisonous. The most deadly toxins of disease have been fed to animals by the mouth, in relatively large amounts, without a sign of poisoning. They are digested into harmless and nourishing amino acids. The toxins of botulism is an exception that is probably composed of molecules sufficiently small to be able to pass into the circulation undigested and, therefore, able to produce anaphylactic poisoning. The deadly cyanogen glucosides behave in a similar manner to proteins but they are not digested by the enzymes of the blood if introduced hypodermically. In the alimentary track

hydrocyanic acid is released as a poison. In the circulation none of the cyanogen seems to be released and all of the molecules, if in reasonable amounts, are removed by the kidneys. These glucocides, therefore, behave in an exactly reverse manner, so far as their poisonousness is concerned, to that of the food proteins.

All so-called poisons appear to possess specific affinities for different kinds of cells just as do the poisons let loose from foods in anaphylaxis, and these are but particular cases of the general rule in all food substances. The bone cells attract a large share of the lime of the circulation. The liver cells take up most of the free sugar and deposit it as glycogen. The thyroid cells take charge of most or all of the iodine. The cells of the choroid coat of the eye drag in a large share of the melanin. In the same way the nerves that supply the extensor muscles accumulate lead and produce, thereby, wrist-drop. The neurons of central vision have an affinity for something in tobacco that leads toward dim vision and blindness. Horses that have fed on tobacco leaves suffer, because of this, from amblyopia. Methyl alcohol breaks up, in the circulation, into something that acts on these same neurons producing blindness. Digitalin and aconitine act particularly on the heart muscles. Curarine acts on the termini of the motor nerves. Adrenalin acts on the terminations of the sympathetic fibres. Caffein has a particular affinity for the kidney and muscle cells. Formaldehyde by linking itself to the aminogen groups of the protein is supposed to arrest metabolism. Ether, chloroform, cocaine, morphine, codeine, and heroine have an affinity for lipoids, being soluble in them, and through this solubility are thought to be able to act on the nerves of sensation, stop their functioning, and abolish consciousness of pain, locally with some and generally with others. In quite small amounts these substances all seem to have but a slight stimulating effect upon the cells that they reach and act upon. A judicious use of digitalis, or of digitalin, strengthens the heart muscles to which they appear to be attracted. A similar use of atropine or belladonna tones and strengthens non-striated muscles, stimulates the respiratory centers and increases intestinal peristalsis. Strychnine is attracted to, and acts upon, the vaso-motor and motor centres of the cord, thus increasing the circulation and producing thereby a general tonic effect, through increased supply of arterial blood. These, and all other so-called poisons, when given in proper amounts, act upon special parts of the body—not to injure them—but to increase their physiological tone.

When animals, and even unicellular organisms, are exposed to them they acquire immunity to their toxic effects, to a most extraordinary degree. Prof. Roger, in his "Medical Pathology," states that an amoeba "can be gradually habituated to water containing 2 per cent. of sea salt; it becomes so accustomed to the new conditions that it perishes when again brought back into ordinary water" (p. 79). Parks, in his work on "Pathogenic Bacteria," tells us that bacteria can be habituated to carbolic acid, if administered in sufficiently dilute solutions, so that, in time, they are able to use it as a food (p. 26). Kobert, in his "Practical Toxicology," says: "The smallest snail will withstand more strychnine than an adult man. Many of the stronger cardiac poisons have no action whatever on insects. The rabbit can take more morphine than can a man fifty times the animal's weight. Doses of lead, nicotine, cysticine, etc., sufficient to poison man fatally do not injure the goat. Amygdalin does not affect dogs, but it kills rabbits. The hedge-hog takes with apparent enjoyment a dose of cantharides that will kill several persons under excruciating pains. Whereas, the frog is extraordinarily susceptible to the digitalis poisons, they have no affect upon the toad" (p. 5). The mongoose is not affected by a snake bite. The California oil fly develops in crude petroleum oil. Prof. C. Pichet has shown that in such cases as he has studied "The law is established that in simple analagous substances toxicity is increasingly greater as the substance considered is found the less abundantly in nature" (*Chem. Abs.*, Feb. 20, 1911, p. 714). Habit in the use of the poisons, like habit with arsenic, alcohol, morphine, tobacco, etc., probably has something to do with such effects. The cells are toned up to a new standard. In vaccination, and serum treatment of disease, the stimulation of cells leaves them able to resist greater amounts of the toxins of such diseases. The anaphylactic effects of different proteins and the susceptibility to most kinds of diseases vary with experience. After one attack of typhoid fever the second attack, if it comes at all, is likely to be very much milder. The cells become more resistant. Prof. H. M. Richards states that: "It has been established that many, if not all, classes of substances which exert a toxic action on protoplasm will become stimulating if presented to the cells in sufficiently small doses" (*Nature*, March 24, 1910, p. 115). Prof. Pfeffer, in his "Physiology of Plants," says: "Submaximal doses of many and perhaps all poisonous substances accelerate respiration, growth, and the production of heat" (Vol. I,

p. 264). Prof. Davenport, Director of the Department of Experimental Evolution, of Carnegie Institute, reporting his many experiments with poisons on plants, says: "It is clear from this table that the addition of even small quantities of innutritious and poisonous substances may so affect the hylogenic processes as to cause twice, or even far more than twice the normal formation of dry substances in a given time, and that this excessive growth increases with the concentration of the poisonous substances up to a certain optimum beyond which growth declines again to below normal" (*Proceedings A. A. Advancement of Science*, 1907, p. 504).

Without the subtoxic effects of adrenalin on the circulation the arteries could not function normally and without thyroidine, growth is arrested and health seriously impaired. Without hydrochloric acid how would gastric digestion proceed? In such cases it is evident that what we call poisons have a very important place in physiology. There is a universal law seen in all living things. It is the benefit derived from normal effort, normal heat, normal electric currents, and normal chemical stimulation. Within proper limits all of these are beneficial. It is only when their stimulation exceeds such limits that they become harmful and this harmfulness is evident in all of them. The muscles are strengthened by massage and by effort. The skin of hands and feet thicken with work. Heat, in proper amount, favors growth as toxic substances do. Just as digitalis strengthens the weakened heart so all poisons strengthen such parts of the organism as they act upon, provided, of course, that the physiological maximum is not exceeded. When will the world take to heart this lesson and use it for our benefit? When will we all learn that a sick man is always a poisoned man? The anaphylactic effects of the poisons of typhoid give us the clue to the particular parts of the system that need toxic toning against such poisons. The anaphylactic effects of malarial poisons give us a similar clue to the parts of the system that require toning against these poisons. When we know enough to experimentally follow these clues, for all sorts of diseases that we suffer from, and that kill us, we will know how to do by every one of them as we do now with digitalin in weakened heart. Such knowledge will put us on the way to true prophylactic medicine.

To know how, during threatened epidemics, and at other times, to strengthen every susceptible cell against that particular kind of disease, will be to enter into a new era of preventive medicine.

To-day we are "locking the stable door when the steed is stolen." Then we will be locking the door before the thief can enter. Our present efforts in preventive medicine have wrought miraculous results but they are all centred upon environmental prevention. If "an ounce of prevention is worth a pound of cure" in one direction it should be in the other. Nature is showing us many ways by which to resist the poisons of microbes. Let us learn our lesson from her. We must become able to poison our poisoners and to inhibit the effects of their poisons upon our cells. The druggists have a duty here that is as great as that of the doctor. He should discourage all reckless talk about the poisonousness of drugs by teaching his customers, when he has an opportunity to do so, that there are no such things as poisons *per se*, that strychnine, in proper physiological amounts is no more a poison than is bread or meat, egg or cheese, and that soluble poisons, properly diluted, are more likely to be beneficial than harmful. Unless this is done there may, at any time, arise a wave of ignorant hysteria that will destroy—as it has already hampered and hindered—medical science in its work of aiding the deluded men and women who are sponsors for restricting and troublous laws.

A NOTE ON THE EXAMINATION OF A COMMERCIAL SAMPLE OF OIL OF PENNYROYAL.*

By George M. Beringer Ph.M.,

CAMDEN, N. J.

On two occasions, recently, samples of what, it was reported, had been sold as Oil of Pennyroyal were presented to the writer with the request that he determine first, whether the sample was Oil of Pennyroyal, and secondly, if it was unadulterated. The sample referred to in this note was one of these.

The sample measured only 15 Cc., and it was desirable to retain at least a portion in the original container for court evidence, so the quantity available for examination was not large.

The U. S. P., 8th Revision, defined Oleum Hedeoma as a volatile oil, obtained by distillation from Hedeoma pulegoides Linné. The

* Read at the meeting of the New Jersey Pharmaceutical Association, Newark, June 9.

sp. gr. was stated as 0.940 to 0.940, and the oil as soluble in two parts, by volume, of a mixture of alcohol 3 volumes, water 1 volume (approximately 70 per cent. alcohol by volume). "This is what is known in commerce as 'American Pennyroyal Oil.'" The later revision of the U. S. P. dismissed this title, and so we have now no official standard for Oleum Hedeoma.

A large portion of the Oil of Pennyroyal of commerce, however, is of European production, and is stated to be distilled from Mentha pulegium Linné. The European oil has a sp. gr. of 0.930–0.960, and is soluble in two parts of 70 per cent. alcohol. *Pulegone* is the most active constituent of both of the commercial varieties of Pennyroyal Oil, and is present in somewhat larger proportion in the European oil. It is a ketone $C_{10}H_{16}O$, in which the Carbonyl group, CO unites with two, alcohol radicals. Its boiling point is given by several authorities as from 221° C. to 224° C.

The sample of oil under consideration was a limpid, pale yellow liquid having a distinct pennyroyal odor, with a mint-like tendency. The sp. gr. was 0.884, and it mixed clear in all proportions with 70 per cent. alcohol. The low specific gravity and the solubility at once indicated that the sample was not normal.

10 Cc. was fractionally distilled from a small distilling flask, 5 Cc. distilled over and was collected at a temperature below 85° C. This portion responded to the ethyl acetate test and other reactions for ethyl alcohol, proving that the sample was not pure Oil of Pennyroyal, but a mixture of which 50 per cent. was alcohol.

The fraction distilling between 218° C. and 224° C. was collected, as this should contain the *Pulegone*, the characteristic constituent of pennyroyal oil. It measued 1.6 Cc. corresponding to 16 per cent. in the sample, or, possibly, 32 per cent. in the original oil. It had the unmistakable odor of pennyroyal, greatly intensified and very persistent, and was soluble in 1.5 parts of 70 per cent. alcohol.

To prove that this was *Pulegone*, two identifying tests were adopted. *Pulegone* being a ketone, the iodoform test was applied as a group reaction, and the response was prompt with copious production of iodoform. *Pulegone* can be reduced by nascent hydrogen to form a menthol. A small portion was dissolved in dehydrated alcohol, metallic sodium added; after the reaction was completed the solution was diluted with water and extracted with petroleum ether. On evaporating the solvent the residue gave the distinct odor and taste of a menthol. The quantity worked with did not

permit of the making of melting point and optical rotation determinations.

From the above tests it was concluded that the sample was pennyroyal oil and mixed with alcohol to the extent of 50 per cent.

ARMY AND NAVY PHARMACISTS.

By E. Fullerton Cook, Ph.M.

During the recent meeting of the American Pharmaceutical Association in Washington, the subject of Army and Navy pharmacists received much favorable attention. The Navy was represented by Lieutenant P. F. Dickens, who is assistant to Admiral Braisted, the Surgeon General, and was his personal appointment.

Dr. Ireland, Surgeon General of the Army, detailed Major A. P. Clark of his staff to tell the Association something of the plans which the Army are perfecting for commissioned pharmacists. The special committee on the Status of Pharmacists in the Government Service, consisting of Messrs. Cook, Beringer, Mayo, Eberle, and accompanied by the Secretary of the Council, Mr. Jos. W. England and by Mr. Leonard A. Seltzer, called on Surgeon General Ireland and Surgeon General Braisted, and discussed the entire situation. It was also possible for this committee to meet Admiral Washington, Chief of the Bureau of Navigation, and to have an interview with Secretary Daniels of the Navy.

Several days later, members of the Executive Committee of the N. A. R. D., including Mr. Samuel C. Henry, Charles H. Huhn and Theo. C. Hagenow, also called upon the Surgeon Generals, and General Ireland and Admiral Braisted carefully reviewed the situation. The feeling expressed by everyone who has learned of the latest developments is one of gratification and approval.

In the Army, the plan proposed by General Ireland for the establishment of a Medical Administrative Corps has passed both the Senate and the House, as a part of the Wadsworth Reorganization Army Bill and is now in conference in joint committee.

Since the above report was written, the Wadsworth bill has been finally passed by Congress and signed by the President of the United States. The Medical Administrative Corps, including the Division

of Commissioned Pharmacists, has become a reality. In the final draft of the bill, without the knowledge of the Surgeon General's office, the time required for service as a private before being eligible for a commission in the regular army, was changed from three years to two years. The highest rank in the Corps was reduced from major to captain. It is interesting to know that with the many criticisms of the Wadsworth Bill, this feature has never been questioned and as the General Staff of the Army have also given their approval of the establishment of this corps, it is reasonable to expect that when the Wadsworth Bill is finally passed, the Medical Administrative Corps will become a part of the law. Dr. Ireland has asked that pharmacists of military experience and of the highest technical training be selected for his assistance in the organization of the Pharmaceutical Section of this Corps. This officer, or possibly two officers, representing the several phases of pharmacy, would possibly be commissioned as a major in the Reserve Corps and then placed on active duty for the time necessary for organization.

Some additional details about the pharmacist's place in the new army will be of interest to every pharmacist. It will be in the reserve corps in peace time that pharmacy will have the greatest opportunity and the most attractive service. Here graduates of pharmacy who meet the other necessary requirements, including proper recommendation, and who have been approved by the proper officer in the Surgeon General's office, will be recommended for commissions as second lieutenants in the Reserve Corps, even though they have no military experience. It is understood that there will be about 1400 of these commissions available. The Medical Corps has secured for its training school, the old Indian school grounds at Carlisle, Pa., where training will be given in all sections of the corps, including the pharmaceutical division. Men who have been commissioned as second lieutenants, or with possibly a higher rating, due to experience in the World War, will be asked to take six weeks of training during the four years of enlistment. This training may be taken at one time or divided, and the school will be open throughout the year. As soon as an officer notifies the department that he is ready to take the training, he will be placed on active duty and his pay start before leaving home. The pay of a second lieutenant is about $1700 per year.

In the Navy, the passage of the Darrow Bill is yet uncertain, but Secretary Daniels has agreed to assist in securing permanent

commissions for the 79 lieutenants of the Hospital Corps who were commissioned during the war, and Admiral Washington promised the committees that he would not oppose such action. Secretary Daniels recommended that the Darrow Bill or similar legislation be introduced in the next Congress, if it is not passed at this time.

NEW ORGANIC ARSENIC COMPOUNDS.

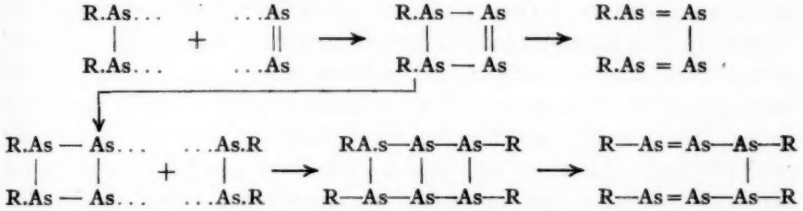
(Contribution from the Wellcome Chemical Research Laboratories.)

At the meeting of the Chemical Society on June 3rd a communication from the Wellcome Chemical Research Laboratories on "arsinic acids derived from guaiacol and veratrole" was read by Mr. R. G. Fargher.

The reaction between *p*-hydroxyphenylarsinic acid and potassium persulphate was shown to give 3,4-dihydroxyphenylarsinic acid, though in small yield and much contaminated with the unchanged acid. Separation of the two was difficult and their identity was most readily established by complete methylation and fractional crystallization of the product. 3-Amino-4-methoxyphenylarsinic acid, prepared from *p*-methoxyphenylarsinic acid by nitration and subsequent reduction, and 3-amino-4-hydroxyphenylarsinic acid were found to resemble *o*-aminoanisole and *o*-aminophenol in the difficulty which attended the decomposition of their diazo compounds, the energetic treatment necessary causing almost complete decomposition of the arsinic acids. The "Bucherer" reaction, by which the amino group in certain aromatic amines is converted into a sulphurous ester by the action of sodium hydrogen sulphite and subsequently replaced by hydroxyl by suitable means, was also unsuccessful.

The final method of attack—the Bart reaction, by which diazotized amines are coupled with sodium arsenite in alkaline solution with or without the presence of a catalyst such as copper powder—proved successful, and 3-methoxy-4-hydroxyphenylarsinic acid, 3-hydroxy-4-methoxyphenylarsinic acid and 3,4-dimethoxyphenylarsinic acid were prepared and their reactions studied, in particular the preparation of the corresponding nitroderivatives and the reduction of these. 3-Methoxy-4-hydroxy-5-nitrophenylarsinic acid underwent the normal arsenobenzene reduction with sodium hyposulphite, giving rise to $3,3^1$-dimethoxy-$4,4^1$-dihydroxy-$5,5^1$-

diaminoarsenobenzene, differing from "salvarsan" only by the presence of a methoxyl-group and resembling it closely in its properties and toxicity. 3-Hydroxy-4-methoxy-5-nitrophenylarsinic acid under similar conditions behaved abnormally, yielding a polyarsenide of the type R_2As_4; while 3,4-dimethoxy-5-nitrophenylarsinic acid, which did not yield an insoluble reduction product, probably on account of sulphamic acid formation, on conversion into the amino acid and subsequent reduction with hyposulphite gave an abnormal compound of a second type R_2As_8 or R_4As_6. The mechanism of the formation of these abnormal products and their possible formulation were discussed. It had been stated by Bertheim that a mixture of molecular proportions of two arsinic acids yielded solely the unsymmetrical arsenobenzene. More recently, Karrer had questioned the mechanism assumed by Bertheim and suggested that the symmetrical arsenobenzenes were first formed and then underwent "double decomposition." Utilizing the principle involved in the second suggestion, as this seemed to be in harmony with the observed facts, fission of the arsenic utilized to form the polyarsenides apparently succeeding rather than preceding reduction, formulae were evolved for the types R_2As_4, and R_4As_6, in accordance with the scheme:



The difficulty of completely proving homogeneity in these compounds was pointed out.

BOTULISM DUE TO OLIVES.*

The continued occurrence of fatal outbreaks of botulism poisoning caused by contaminated olives prompts our frequent reference to this situation. Many of the features of botulism outbreaks are still quite obscure; and in view of the urgent necessity for practical methods of prevention, every contribution to our knowledge of this form of food poisoning should be closely considered by sanitarians

* From *Jour. Amer. Med. Assoc.*, May 1, 1920.

and health officials. The summary of the investigations of the Bureau of Chemistry on olive poisoning, given elsewhere in this issue,[1] contains material of general interest and practical application. Four of the five outbreaks reported in the summary were due to a toxin produced by the Type A of *Bacillus Botulinus;* the organism responsible for the fifth attack is not yet differentiated. Type A is the type found in California, and differs from the type present in the Eastern states and apparently from that observed in Europe. This summary leaves one in some uncertainty as to whether green olives as well as ripe olives have been implicated in botulinus poisoning. In the Montana outbreak, olives stuffed with pimento are considered to have been the source of the trouble, and in another instance "olive relish" in a tin container was the substance involved. It is not clear whether the "relish" was made of green or ripe olives, but it is certainly true that green and not ripe olives are commonly used for "stuffing." The title of the Bureau of Chemistry summary, on the other hand, seems to limit the poisoning to ripe olives, so that a clear statement on this point seems desirable. The important question as to whether or not *B. botulinus* contamination in canned food is always accompanied by physical signs of decomposition seems to be answered in the affirmative by the experience of the government investigators. They state that in all the material examined by them in which *B. botulinus* was present, the odor was distinctly offensive. This characteristic is a doubtful safeguard, however, since olives washed, iced or served with highly flavored foods may not betray their dangerous nature, particularly to persons unfamiliar with the natural taste of ripe olives. The source of the odor does not seem to be cleared up by these investigations. Whether the disagreeable smells are due to the products of *B. botulinus*, or whether the other microörganisms apparently always present in the imperfectly sterilized contents of the jar or can have given rise to the putrefactive conditions, is left undetermined by the evidence printed in the article cited. The conclusions of the Bureau of Chemistry worker that more efficient methods of sterilization should be employed, that brine packing should be modified, and that olives should be handled with the same degree of care and cleanliness as any other perishable food product seem abundantly justified.

[1] DeBord, G. G., Edmondson, R. B. and Thom, Charles: "Summary of Bureau of Chemistry Investigations of Poisoning Due to Ripe Olives," *Jour. Amer. Med. Assoc.*, May 1, p. 1220.

THE TRUTH ABOUT VITAMINES.*

By R. Cecil Owen, B.Sc.

Most of us were brought up in the belief that the whole truth about food-stuffs was expressed by saying that the necessary and sufficient food factors were: proteins, fats, carbohydrates and inorganic salts; to which, of course, had to be added water. Till quite recently it was universally believed that given these factors, life could be sustained and growth promoted, and that in the absence of any of them a gradual starvation ensued. Careful and prolonged experiment, however, appears to make it certain that while the food factors referred to are necessary, they are not sufficient; that if animals are fed upon a mixture, in any proportion, of proteins, fats, carbohydrates, inorganic salts, and water, all in an absolutely pure condition, growth is first of all checked, then starvation supervenes and finally the animal dies. The seeming certainty of these things has led to the framing of the vitamine hypothesis. The results of certain experiments are explained by saying that the foods which are, in universal experience, found to be capable of sustaining healthy life, contain, in addition to the ordinary familiar factors, certain accessory factors; and to these has been given the generic name of "Vitamines." Let us illustrate our meaning by reference to some familiar substance. Chemically, butter and margarine may be—so far as one can say in the light of the chemistry of to-day—identical. It is therefore natural to suppose—the conclusion indeed seems irresistable—that in food value the two substances are identical. Yet what do we find? If rats are fed for a time on a diet containing butter the diet being sufficient for normal life, and if the diet be after a time changed so far as to substitute certain margarines, or lard, for the butter, it is found that the animals experimented upon cease to grow (if young enough to grow), and decline and die. Upon such lines a large number of experiments, very carefully made, have been carried out. The general conclusion arrived at is this, that the substitution of artificially prepared (*i. e.*, absolutely pure) fat—or even lard, for the fat contained in a diet sufficient to sustain life, led to the rapid decline and early death of the animal; and the theory educed by way of explanation is that certain fats contain "vitamines" while others do not.

* From *The Prescriber*, May, 1920.

It is extremely necessary to bear in mind what part of our subject is indisputable fact, and what part theory, hypothesis, or guessing; otherwise no adequate grasp of the vitamine theory is possible. In an actual experiment—there is space only for the mention of one—rats were fed upon a mixture of caseinogen, starch, cane-sugar, lard, and inorganic salts, all very carefully purified: resulted in decline and death. Rats were then fed for a limited period on this "pure" diet; decline again set rapidly in. Then a small allowance of milk was added each day, with the result that a perfect food was produced, and the animals once again flourished.

Enough has now been said to illustrate the lines upon which experiments have been made. Let us now outline the conclusions arrived at. Certain fats, as we have seen, contain "vitamines," and such fats are necessary food factors. These vitamines are known as "A" vitamines, or "fat-soluble" vitamines. But there are others. There is "B" vitamine, or "water-soluble" vitamine, contained markedly in yeast-extract, for example. And there is a third, known (somewhat clumsily) as "anti-scorbutic" vitamine, and found nowhere so abundantly as in fresh lemon juice. In the light, then, of our present knowledge, we may say that the whole truth about food-stuffs is contained in the following statement: Foods necessary and sufficient to sustain animal life contain, in addition to proteins, carbohydrates, fats, inorganic salts and water, three "vitamines" known as A (fat-soluble), B (water-soluble), and C (anti-scorbutic).

Now let us, with all possible brevity, give some account of the vitamine content of the foods in common use—not, of course, exhaustively, but only for the sake of intelligibility.[1] V. A. is found in butter, cod-liver oil, suet, fish oil, nut butters (which *nota bene*), lean meat, liver, kidney, sweet breads, fish only if fat, whole milk dried or raw, cheese, eggs, wheat germ, linseed, haricot beans, cabbage, lettuce, spinach, carrots, raw potatoes, bananas, nuts; but not in vegetable margarines (N. B.), lard, olive oil, cacao butter, linseed oil, hardened fats, white fish, skim milk, polished rice, or meat extracts.

V. B. is found in lean meat, liver, kidney, heart, milk (whole, skim, raw, or dried), eggs, wheat, peas, cabbage, lettuce, spinach, carrots, bananas, nuts, yeast extract, dried yeast; but not in butter,

[1] In what follows V. A. stands for fat-soluble vitamine, V. B. for water-soluble and V. C. for anti-scorbutic.

cream, olive oil, white flour, custard powders, pea flour, or meat extracts.

V. C. is contained in lean meat, liver, raw milk, whether whole or skim, germinated pulses, cabbage fresh or cooked, fresh juice of the Swede, carrots, cooked potatoes, fresh beans, lemon juice fresh or preserved, lime juice only if fresh, orange juice, raspberries, apples, tomatoes; *but not in preserved lime juice* (N. B.) nor in yeast, meat extracts, tinned meats, eggs, wheat, white flour, custard powders, dried peas, nor in any oils animal or vegetable.

The only food, apparently, rich in all three vitamines is the humble cabbage (fresh); while white wheaten flour, pure cornflour, and polished rice contain no vitamines whatsoever, and the same thing is true, alas, of beer.

It has long been known that the cause of scurvy was the lack of fresh vegetables and fruit, and to a smaller extent of fresh meat. To-day we say, with an effort of greater precision, that scurvy owes its incidence to want of vitamine C, the anti-scorbutic vitamine. Attempts have been made to investigate this question quantitatively as well as qualitatively. Thus it has been shown that by removing green stuff from the diet of guinea-pigs and feeding them on grain and water only, scurvy, with its characteristic features of hemorrhage and bone-changes, was induced, and from it the animals died in from twenty to forty days. Similarly scurvy was prevented, or cured, by the addition to the grain and water diet of fresh cabbage, carrot, cranberries, sorrel, or dandelion leaves. Then the anti-scorbutic potency of various food-stuffs was ascertained—only roughly, of course—by determining the minimum quantities which had to be added to the grain and water diet so as just to prevent scurvy. In this way it has been found that for guinea-pigs—and, it is inferred, for the human subject also anti-scorbutic food-stuffs, may be classified as follows in *decending* order of value:

1. Raw cabbage, fresh lemon juice, fresh orange juice (greatest value).

2. Runner beans, juice of Swedes.

3. Germinated lentils, cooked cabbage, preserved lemon juice, fresh lime juice.

4. Carrot juice, beetroot juice, onion, cooked potato.

5. Grapes, apples, tamarind, mango, kokum, meat juice, raw milk (smallest positive value).

6. Grain (whole), gum, bran, polished rice, whole dry pulses,

desiccated vegetables, pickled vegetables, preserved lime juice (N. B.), eggs, tinned meat, yeast (of no—V. C.—value).

I quote the following from the N. H. I. Medical Research Committee's "Report on the Present State of Knowledge Concerning 'Vitamines:'"

"The anti-scorbutic accessory factor is found in nature associated with living tissues in which metabolic processes are still proceeding. When these active processes cease or are greatly reduced, as in seeds, or when the tissues are destroyed, as in heating or drying, the anti-scurvy 'vitamine' also disappears. In the case of seeds it is created anew during germination."

It is not then to be wondered at that cooking is distinctly destructive of the vitamine in anti-scorbutic food-stuffs. Experiments made with cabbage leaves point to the following conclusions: When heated in water for one hour at temperatures ranging between 80° and 100° C., 90 per cent. of the vitamine is destroyed; when heated for one hour at 60° C., or for twenty minutes at 90–100° C., the loss of vitamine is found to be 80 per cent. An interesting practical conclusion is this, that it is better to cook anti-scorbutic foods quickly at a high temperature than slowly at a lower temperature. The vitamines are more quickly destroyed in an acid or alkaline medium. Vegetables should, therefore, be boiled in pure water, without the addition, *e. g.*, of soda.

There are now good reasons for believing that beri-beri is a deficiency disease; and that, moreover, its incidence is due to a lack of "vitamine B," which is therefore known as "anti-neuritic" vitamine. As long ago as 1897, Eijkman, a medical officer to a prison in Java, had a number of beri-beri cases in his charge. He observed that his poultry, fed largely on rice refuse, sickened and died of a disease whose symptoms resembled those of the beri-beri of his patients. There was paralysis and there was a marked degeneration of the peripheral nerves. These observations were the starting point of a series of experiments which compelled the conclusion that avian polyneuritis was the counterpart of human beri-beri. Experiments conducted on lines already briefly described warrant the belief that beri-beri is caused by the absence, and can be cured by the restoration, of vitamine B to an otherwise unexceptionable diet. Polished rice has undoubtedly been the main offender in causing beri-beri; and it has been abundantly proved that if to polished rice be added the constituents (embryo and pericarp) re-

moved during milling, the diet so formed is capable of preventing the disease. The following list of food-stuffs is arranged in order of merit so far as their anti-beri-beri value is concerned: Rice germ, wheat germ, lentils, yeast (pressed), egg yolk and ox liver (equal), peas (dried), wheat bran, beef muscle, potatoes.

With reference to the effects of heat upon vitamine B it may be said that, broadly speaking, heat has no marked detrimental action, till temperatures of over 100° C. are reached. Even prolonged exposure to temperatures of less than 100° C. has little or no effect, but when this temperature is exceeded, especially if by more than 20°, rapid deterioration is observed. It follows, then, that bread, biscuits, etc., should be baked at a temperature not exceeding 100° C.; as also that *tinned foods of all descriptions*, exposed as they are for various reasons to high temperatures, *are almost wholly lacking in vitamines*.

Now let us return to vitamine A. We may say that there is irresistable evidence—of a similar kind to that already briefly recounted in connection with vitamines B and C—to precipitate the conclusion that vitamine A is the "cure" for rickets and other wasting diseases, and is conveniently described as "anti-rachitic" vitamine. Experiments made upon puppies show that diets I and II prevented rickets, while diets III and IV did not.

Diet I.—Whole milk, porridge, rice, NaCl.

Diet II.—Whole milk, white bread, NaCl.

Diet III.—Separated milk, white bread, linseed oil, yeast, NaCl.

Diet IV.—Separated milk, white bread, linseed oil, yeast, orange juice, NaCl.

Experiments made in great numbers confirm the conclusion that rickets is caused by the absence from an otherwise perfect diet of certain fats and other substances (vide supra), and may be cured by a restoration to the diet of these food-stuffs. The theoretical conclusion is that ricket-preventing food-stuffs contain a hypothetical substance called "Vitamine A," or "anti-rachitic vitamine," supposed also to be fat soluble.

The effect of heat upon anti-rachitic substances is important. They are the most stable of all the vitamine foods in the presence of heat. Thus butter is de-vitaminized by exposure to a temperature of 100° only after four hours. The "hardening" of oils by the action of nascent hydrogen is a swift and certain means of destroying their vitamines.

We have seen that the absence from a diet of any one of the three vitamines gives rise to a corresponding disorder: The absence of vitamine A causes rickets, of B beri-beri, and of C scurvy. Now, there is good evidence for believing that another disease, pellagra, which is endemic in Northern Italy, Roumania, and in certain parts of North America, is due to the absence of four food factors—two of them vitamines—though whether all four "absences" have to be present together or only in pairs is a point not yet solved. The four pellagra-producing factors are these: (1) Shortage of vitamine A; (2) shortage of vitamine B; (3) shortage of inorganic salts; (4) shortage of proteins. It is at any rate certain that no one factor alone can produce pellagra, but that at least two of them together must be present. The symptoms of pellagra are gastro-intestinal disturbances and bilateral symmetrical dermatitis. But the whole subject of the relation of vitamines to disease is in its infancy. The question of pellagra, by offering a combination of causes, opens up a complicated field for research.

The most astonishing thing about vitamines is that they are apparently non-existent. We are often told, somewhat loftily, that "vitamines have not, as yet, been isolated." This is only a part of the truth. The whole truth is *that their existence has not yet been demonstrated.* If this declaration, coming at the end of an article on vitamines, sounds paradoxical, I must add a word or two in explanation. We have seen that butter differs from vegetable margarine in certain important particulars. Butter has properties which margarine has not. But this fact, indisputable as it is, is a long way from warranting the conclusion that butter = margarine + vitamine. Tartaric acid has a property ("optical activity" is it called) which racemic acid has not, and both acids are chemically identical. But this fact does not warrant us in saying that tartaric acid contains "opticamine," while racemic acid does not. The truth is that tartaric and racemic acids are isomeric, and are identical in every way except as to the arrangement of their atoms within the molecule. A similar hypothesis seems preferable to explain the important differences between the glyceryl oleate, etc., which we call butter, and the same chemical compounds which we call margarine. It is an indispensable rule, in framing hypothesis to explain phenomena, not to go beyond what is warranted by data. The Law of Parsimony applies here. That hypothesis should be chosen which follows the most closely on the heels of the facts, which puts

the smallest strain on one's credulity, and which is simplest and lies nearest at hand. It is simpler and less erratic, and altogether more convincing, *in view of all the facts*, to postulate isomerism as the explanation of the differences between certain natural and artificial food-stuffs, rather than to guess at the existence of new substances which nobody has yet isolated, or even detected, and about which nobody knows anything whatever. For nobody, observe, knows anything about vitamines, but only about butter, lean meat, fruits, yeast, and so forth. Hence it is likely that the most fruitful hypothesis will prove to be that of biological isomerism rather than that of "vitamines."

ALCOHOL: ITS RELATION TO SCIENCE AND INDUSTRY.*

By William L. Crounse.

In this presence it would be a waste of words to undertake to emphasize the importance of alcohol in pharmacy. I feel, however, that in view of the extraordinary events of the past year and the conflict of counsels as to the policy the drug trade should pursue in protecting itself against the hazards incident to the enforcement of the unprecedented provisions of the Volstead Act, I am justified in appealing to you to do your bit in securing for alcohol the official recognition to which it is entitled as the most essential chemical raw material known to industrial science.

The man in the street is apt to consider distilled spirits solely as the means of producing a condition of more or less delightful exhilaration, with a dark brown taste the morning after. To the extreme prohibition enthusiast all forms of spirits are anathematized as the Demon Rum. But few persons outside the circle of those who actually employ alcohol in science and industry appreciate its indispensable character, or realize that if its supply were cut off thousands of manufacturing plants would cease operations, hundreds of thousands of men and women would be thrown out of employment and the science of medicine relegated to the dark ages.

While, therefore, the law of the land, which we all cheerfully obey, requires that adequate safeguards shall be thrown around the use of alcohol to prevent its diversion to beverage purposes,

* Address delivered at the meeting of the American Pharmaceutical Association, Washington, May, 1920.

yet we who realize its value to science and the industrial arts should not hesitate to demand that it shall be available for every legitimate purpose and on terms that represent a minimum of expense and hardship to the user.

USE OF DENATURED ALCOHOL.

No development in the utilization of alcohol is more significant of its great importance to industry than the enormous increase in the consumption of denatured spirits since the passage of the so-called free alcohol law of 1906. It was my pleasant task to assist the manufacturers of the country in the efforts to secure the passage of that statute and it has been a matter of great satisfaction to me to note the rapid development of the use of denatured spirits under its beneficent provisions. Beginning in 1907 with a total consumption of completely and specially denatured alcohol of 1,780,276 wine gallons, the total rose in 1914 to 10,404,975 gallons. In 1914 the World War began and the demand for alcohol, first, for the manufacture of smokeless powder, and, second, for the production of our allies and for the United States of various gases, including the deadly mustard gas, received an enormous impetus, consumption rising rapidly until in 1917 the peak was reached with a total of 55,679,597 gallons, of which 10,508,919 gallons were completely denatured and 45,170,678 gallons specially denatured.[1]

Fiscal Years.	Completely Denatured. Wine Gallons.	Specially Denatured. Wine Gallons.	Total. Wine Gallons.
1907	1,397,861.16	382,415.19	1,780,276.35
1908	1,812,122.38	1,509,329.35	3,321,451.73
1909	2,370,839.70	2,185,579.15	4,556,418.85
1910	3,076,924.55	3,002,102.55	6,079,027.10
1911	3,374,019.92	3,507,109.94	6,881,129.86
1912	4,161,268.56	3,933,246.44	8,094,515.00
1913	5,223,240.78	4,608,417.76	9,831,658.54
1914	5,213,129.56	5,191,846.03	10,404,975.59
1915	5,386,646.96	8,599,821.81	13,946,468.77
1916	7,871,952.82	38,807,153.56	46,679,106.38
1917	10,508,919.34	45,170,678.29	55,679,597.63
1918	10,328,454.61	39,834,561.48	50,163,016.09

Notwithstanding the rapid increase in the consumption of denatured alcohol in this country, at the time of the beginning of the

[1] The following table shows the production of alcohol both completely and specially denatured by fiscal years, since the passage of the free alcohol law of 1906:

great war, Germany was producing ten gallons to our one, a fact which has had an important bearing upon German supremacy in the vast field of industrial chemistry.

The part borne by alcohol in the war is worthy of much more space than the limits of this brief paper afford. It is interesting however, to recall the fact that when the great German offensive was on in 1918 and the British and French armies stood "with their backs against the wall," General Pershing sent an order to the United States for 1,000 tons of mustard gas per day, to be delivered forthwith. To produce a ton of mustard gas requires a ton of alcohol; hence to arrange for the filling of this enormous order, the War Industries Board was obliged to mobilize the entire distilling industry of the United States and turn it for the time being from all other classes of production to the making of alcohol. But for the intervention of the armistice it is probable that the distillers of the United States for many months would have been able to furnish nothing but the raw material for the deadly gas that was so signally aiding the Allies in the winning of the war.

You are all familiar with completely denatured alcohol, which, since 1906 has been permitted to be freely sold and used for a variety of industrial and domestic purposes. Few of you, however, have been brought into close contact with specially denatured alcohol which, after distillation, is modified by the use of a large number of different chemical agents for consumption in an enormous variety of industries. A single formula of the thirty-five now in use has been approved for employment in the manufacture of nearly two hundred articles ranging from smokeless powder to artificial flowers, and from transparent soaps to the ink used in the interstate branding of meats.

ALCOHOL IN MEDICINE.

It is not surprising that the average layman should be at a loss to know where to turn for reliable information concerning the function of alcohol in medicine. This uncertainty is largely due to wholesale misrepresentation, in part deliberate and in part due to ignorance, by over-zealous partisans of the cause of prohibition. It has been one of my most exasperating experiences during the past two or three years to listen to statements made before important committees of Congress by certain of these zealots to the effect that, if the supply of alcohol should be immediately cut off, medical science would in

no way be embarrassed, the preparation and administration of drugs would in no respect be restricted or inconvenienced, while the science of therapeutics would actually be benefitted thereby.

It is usual for these enthusiasts, none of whom claim any knowledge of medicine, pharmacy or chemistry, to take as a text a statement of some physician or a resolution adopted by some medical society to the effect that the position of alcohol as a therapeutic agent is more or less doubtful, and urging that physicians use a greater degree of restraint in prescribing alcoholic stimulants.

Upon these premises—which, of course, are debatable ground—is based an argument that alcohol is no longer necessary in medicine, and I have heard some of the more extreme advocates of this theory declare that no exemptions should be provided in the Federal Prohibition Act for standard drugs, proprietaries, toilet articles or flavoring extracts.

Of course, what the physicians who are quoted in this connection have said—and there is a wide divergence of expert opinion on the subject—has been confined exclusively to the use of spirits for their direct therapeutic or stimulating effect, and has had no bearing whatever upon the employment of alcohol as an extractive agent, solvent or preservative.

I think it is only fair to say that in the majority of cases these zealous gentlemen have been entirely ignorant of the technical reasons for the employment of alcohol in the manufacture of medicines, and have been honest in their belief that such spirits as are used in the average alcoholic medicinal preparation are deliberately introduced for the purpose of stimulating the patient, the physiological effect of the spirits being counted upon by the manufacturer or prescriber in exactly the same way that the other ingredients are relied upon to produce certain results.

Conceding, however, that these gross misrepresentations have been made in good faith, what shall be said of the arguments predicated upon such ignorance, or of law-makers or administrators who permit themselves to be swayed by such influences?

While the efforts which pharmacists and chemists in many lines of industry have been making in recent years to discover satisfactory substitutes for alcohol, especially for purposes of solution and preservation, are in line with the broad basic principles underlying the progress of science, nevertheless they should not mislead us into assuming a timid or equivocal attitude with respect to alcohol, or

deter us from defending our right to use it whenever and wherever the rules of pharmacy and chemistry require. The mere fact that there are abuses in the use of alcohol, which nature, for some inscrutable reason has made intoxicating, should no more deter the reputable manufacturer or physician from employing it in the preparation of drugs than occasional murders or suicides by the use of poisons should operate to eliminate all poisonous drugs from the Pharmacopoeia.

There are some sound reasons why scientific research should be directed toward the discovery of substitutes for alcohol. High cost is one of them. This consideration alone is steadily operating to reduce the amount of spirits employed in every preparation in which it is feasible to make any reduction whatever. Never before in the history of the drug trade has it been so difficult to obtain a supply of alcohol, and the mounting price and difficulty of procurement have constituted incentives that would have stimulated experimentation in a much greater degree if the prospect for the discovery of satisfactory substitutes had been more encouraging.

Every retail druggist will welcome the efforts made by the Pharmacopoeial Committee to reduce the alcoholic content of official preparations. Any substantial reduction attained will tend to curtail the cost of production and to render official preparations less liable to be diverted by degenerates to beverage purposes, but the standards finally fixed by the United States Pharmacopoeia and National Formulary should be promptly accepted as irreducible minima, and pharmacists the country over should unite in demanding the right not only to employ alcohol in accordance with these standards, but also to obtain an adequate supply with the least possible difficulty and expense.

HOUSE-CLEANING OF DRUG TRADE.

The retail drug trade may well congratulate itself upon the splendid job of house-cleaning it has done in casting out fake alcoholic proprietary medicines, in putting out of business whiskey sellers thinly disguised as druggists, and, more recently, in confining the sale of wines and liquors to strictly legitimate purposes. In this movement the retailers are now enjoying the hearty coöperation of the drug jobbers who appreciate that if the trade is to be kept clean-handed the wholesalers must support the highest standard adopted by the retailers and refuse to sell alcoholic preparations to anyone

under circumstances which would justify the suspicion that they are to be diverted to beverage purposes.

In liberalizing the original House draft of the Volstead Act for the purpose of providing adequate exemptions for the drug and allied trades, the proviso that exempted articles must be "non-potable and incapable of being used for beverage purposes," was stricken out, and the phrase "unfit for beverage purposes" was substituted. In view of this concession, the Congressional leaders, at the instance of the representatives of the drug trade, inserted as a corollary an additional provision, in part as follows:

"Any person who shall knowingly sell any of the articles mentioned in paragraphs *a*, *b*, *c* and *d* of this section for beverage purposes, or any extract or syrup for intoxicating beverage purposes, or who shall sell any of the same under circumstances from which the seller might reasonably deduce the intention of the purchaser to use them for such purposes, or shall sell any beverage containing one-half of one per centum or more of alcohol by volume in which any extract, syrup or other articles is used as an ingredient, shall be subject to the penalties provided in Section 29 of this Title."

While this provision makes it incumbent upon every house in the trade, whether manufacturer, jobber or retailer, to use the utmost care to prevent the diversion of alcoholic preparations to beverage uses, in my opinion it imposes a special obligation upon the jobber, for it is in his power to control the distribution of alcoholic medicinal preparations, toilet articles, etc., to a marked degree. As illustrating my own view of the jobbers' duty in the premises—a view which I am confident has been quite generally accepted throughout the wholesale drug trade—I will quote the following extract from an address which I made before the National Wholesale Druggists' Association at its convention held in New Orleans last November:

"Under the provisions of the Volstead Act it becomes the duty of every manufacturer or distributor of an alcoholic preparation which might be diverted to beverage purposes to carefully scan every order for such goods he may receive and to refuse to sell such articles in quantities in excess of what he believes to be the reasonable requirements of the purchaser for strictly legitimate purposes. It is, of course, impossible to lay down any hard-and-fast rule with respect to the quantities of various articles which may properly be sold. No two purchasers necessarily have exactly the same requirements, but it is believed that every jobber is in position to

know if an order for any of the articles in question is in excess of the actual needs of the buyer for legitimate purposes. In no case should an order be filled for the maximum quantity called for if the jobber is in doubt as to the prupose for which the goods will be used.

"For their own protection, members of the National Wholesale Druggists' Association should make and preserve such records as will clearly show their intention to observe the spirit as well as the letter of the law, and their daily practice pursuant thereto. No intricate system need be adopted, but it is suggested that such records should be kept as will enable jobbers to compare incoming orders for the alcoholic preparations in question with those previously received from the same customers to determine whether by increasing quantities, or purchasing more frequently, such customers are accumulating unnecessarily large stocks. A record should certainly be made of all orders the quantities of which jobbers find it necessary to reduce, as such data constitute the best possible evidence of an intention to coöperate with the Government in the strict enforcement of the law. It will also be well to preserve in the same file, copies of correspondence relating to reductions of orders, together with copies of all circulars or other memoranda that may be sent out to the trade; also copies of instructions to salesmen, office employes, etc., etc.

"It should be borne in mind that the fact that an article is made in accordance with the United States Pharmacopoeia, or the National Formulary does not take it out of the category of alcoholic preparations which may be improperly diverted to beverage purposes. Nor does the high alcoholic content of a preparation necessarily include it within the suspected category, for it is conceivable that a preparation might be nearly all alcohol and yet contain a small quantity of a drug so powerful as to render it impossible to drink it. The test is whether the goods are likely to be used as substitutes for intoxicating beverages; if so, everything possible should be done to prevent their sale in quantities exceeding the demand for the legitimate purposes for which they are intended."

REGULATIONS UNDER VOLSTEAD ACT.

The entire drug trade, and in fact all users of alcohol who are thereby subject to official supervision, are to be heartily congratulated upon the present personnel of the Prohibition Unit of the

Internal Revenue Bureau. Mr. Kramer, the Prohibition Commissioner, is discharging his duties with an intelligence, an impartiality and a resourcefulness that have already inspired the confidence of every one who has had dealings with him. In Deputy Commissioner Gaylord, we have one of the most experienced, farsighted and progressive men in the entire Government service. Mr. Gaylord is an expert not only in Internal Revenue Law and regulations and in the administration of statutes requiring tact as well as skill, but he is probably the best-informed man in the Internal Revenue Bureau with regard to the industrial position of alcohol. His technical knowledge and his keen appreciation of the necessity for administering the Prohibition Law in such a way as to minimize the restrictions and annoyances imposed upon manufacturers who are obliged to use alcohol, render him not only an exceedingly useful aid to Commissioner Kramer, but an official who can be counted upon at all times to give the fullest possible consideration to legitimate interests while executing this difficult statute in accordance with its spirit as well as its letter.

That there is much room for improvement in the present code of regulations the officials of the Prohibition Unit will be the first to concede. The present code of rules was framed to cover uncharted ground. There were no precedents for supervision of the character and extent required by the Volstead Act, and much that has been done will doubtless be undone; nevertheless, the regulations as a whole have thus far disclosed as few faults as have been developed in the case of any similar code which the Government has heretofore adopted under any other statute, and it has already been demonstrated that the officials feel no pride of authorship, but stand ready to modify any regulation when it can be shown that it can be improved in any important respect without sacrificing the validity of the statute.

The present method of obtaining alcohol upon permits, known as Form 1410, leaves much to be desired. It is clumsy and costly and its use frequently involves indefinite delay. It does not adequately protect the Government, but discriminates in favor of unprincipled persons seeking to exploit the statute and against the honest, conscientious manufacturer or dealer.

I recently had the honor to be chairman of a committee representing the drug and allied trades, which after extended conferences with representatives of all branches of our industries recommended

to the Bureau the abandonment of Form 1410 as applied to all purchases of original stamped packages of alcohol, and the substitution therefor of a "floating" permit similar to that used successfully for many years in the procurement of specially denatured alcohol. Such a permit would bear upon its face a statement of the maximum quantity of alcohol which the holder would be allowed to purchase during a ninety-day period under his outstanding bond and could be lodged with any distiller and drawn against from time to time, by mail, telegraph or telephone, until the limit of the bond should be exhausted. The distiller or dealer making shipment on this floating permit would enter the amount thereon and at once mail a notice of the shipment to the Prohibition Director of the district and to the Prohibition Commissioner in Washington.

Under existing conditions, and especially because of the scarcity of alcohol, it is difficult to procure spirits promptly and in the great majority of cases orders on Form 1410 have to be returned to the holder of the permit for the purpose of reducing the quantity ordered. Thus vexatious delays occur and holders of permits to use alcohol for manufacturing purposes frequently find themselves without any of this very necessary material at hand. The existing requirement that all the copies of Form 1410, of which a large number are required each month, shall be sworn to, is, of course, a wholly unnecessary expense, for if a manufacturer holds a permit no further evidence of his right to use alcohol should be required.

The importance of the reform that would be effected by the substitution of a single floating permit for the numerous copies of Form 1410, is suggested by the fact that at the time of the recent conference of our trade committee with the officials of the Prohibition Unit, one Prohibition Director was being called upon daily to sign 12,000 individual permits to purchase. Relieved of this purely clerical work, the entire supervisory service could be devoted to the investigation of applications for permits, a task of crying necessity in view of the large number of permits perfunctorily issued during the days immediately following the taking effect of the Volstead Act. Many unscrupulous persons, seeking to reap a harvest in a short time through the diversion of alcohol and other intoxicating liquors to beverage purposes, procured permits which they could not have obtained upon full investigation, manufactured quantities of fake medicine or toilet articles or spurious liquors, and after marketing them at enormous profits decamped for parts un-

known, leaving nothing behind them but a smirch upon the good name of legitimate industries and an acute heartache in the Prohibition Unit. I am glad to say that these cases are being most carefully investigated and large numbers of permits will undoubtedly be cancelled.

There are many incongruities in the law and regulations that I am confident will be corrected in a short time. For example, what would be more ridiculous than a rule which permits the house physician of a hotel to prescribe a pint of whiskey for a transient guest staying perhaps but a night in a place, but which renders the guest a criminal, liable to serve a term in the penitentiary, if he attempts to take the whiskey with him when leaving the hotel, thus making it necessary for him to consume the entire pint at a sitting to keep out of jail. I am glad to be able to say that the Bureau is now considering the feasibility of authorizing a special label to be attached to containers of spirits regularly prescribed by physicians, showing the name and permanent address of the patient, the name and address of the physician and of the druggist from whom the spirits were purchased and any additional data that may be deemed advisable. Of course, it hardly need be said that it would be next to impossible to convict of a crime a person who, having regularly received a pint of spirits upon a physician's prescription, should be detected in the attempt to convey same from the hotel where he chanced to be stopping to his permanent home; nevertheless, it is important that such a matter should be provided for by regulation and not left to the variable judgments of special agents, district attorneys and courts in a hundred different jurisdictions.

Retail druggists of late have been rendered apprehensive by persistent reports, current for some time, that the Prohibition Commissioner is preparing to issue an order limiting to 100 gallons the amount of alcohol in all forms they will be permitted to procure in any 90-day period. These reports are erroneous though they have a basis in the fact that the Commissioner has been giving considerable attention to the problem of the practicability of determining the maximum quantity of spirits which a retailer can legitimately use in the course of three months.

Up to the time this was written, no hard-and-fast rule had been adopted and there appear to be sound reasons why it is impracticable, if not impossible, to fix a limit that would not work great hardship if it were made at all restrictive. For example, an amount

of alcohol which would be ample for a small druggist with a limited prescription business who is in the habit of purchasing rather than making the bulk of his alcoholic preparations, would be wholly inadequate to meet the needs of another druggist with an equal volume of business who stood well with the doctors because of his careful methods and who, like the old school pharmacist, makes his own tinctures, two or three successful little proprietaries of his own and other articles which are now commonly purchased of the wholesaler.

I feel confident that the Prohibition Commissioner will take a reasonable view of this whole matter and that if any limit, other than the size of the druggists' bond, is adopted, it will be sufficiently elastic to avoid all hardship.

Manufacturers, jobbers and retailers, alike, have been put to a great deal of trouble and considerable expense by the Bureau's ruling requiring monthly reports concerning all alcohol consumed. In view of the fact that the only parties allowed to employ non-beverage alcohol for manufacturing purposes or for sale are presumed to have been carefully investigated by the Bureau, and of the further fact that unscrupulous persons would have no difficulty in falsifying these reports in such a manner as to escape detection, it is natural that the casual observer should jump to the conclusion that the time and the money they cost the trade are out of all proportion to their practical value to the Bureau.

I think we should suspend judgment on this matter, for a while at least, and give the report system a fair trial. It is possible that it may prove of sufficient value to the Bureau to justify its permanent retention. If so, it may be practicable to simplify the reports somewhat and perhaps to require them to be rendered quarterly instead of monthly, which, in many cases, would substantially reduce the labor of the permit holder.

I know that our friends in the Internal Revenue Bureau would give even greater consideration to the question of demanding additional reports or of requiring additional records to be kept if they could see the cold figures representing their cost to the business men of the country. I have in my possession letters from three large manufacturing and jobbing houses in the drug trade in which the extra cost of the narcotic and alcohol regulations is put down in one case as exceeding $10,000 per annum, and in another as more than $12,000, while in the third case it is estimated that the cost exceeds 10 per cent. of the value of the entire output of all classes of com-

modities. While the extra cost to the average retailer is not very much as measured in dollars and cents yet, multiplied by the many thousand dealers now doing business in the United States, the aggregate must run far into the millions.

In this connection I would bespeak your patient consideration for any personal eccentricities that may be developed by Mr. Kramer's staff of Prohibition Directors. You who are accustomed to deal with the veteran experts of the Internal Revenue Service may frequently be tempted to become a bit testy over the super-zeal or lack of knowledge on the part of some of these new officials. I am confident, however, that none of you have had as comprehensive an experience in dealing with these gentlemen as has fallen to my lot since the 16th of January, and I take pleasure in testifying to their general intelligence, their impartiality and their uniformly good intentions. Mr. Kramer is following their movements with a keen eye and will not hesitate to put them on the right track whenever they go wrong. I am certain, however, that within a reasonable length of time you will find them discharging their duties with tact and discretion, as well as with properly directed zeal. There will necessarily be a few exceptions to this rule, but whenever you encounter one you have only to remember that Mr. Kramer's permanent address, 365 days in the year, is 1330 F Street, Washington, D. C.

PHARMACISTS' ATTITUDE TOWARD ALCOHOL.

Action taken during the past year by organized retailers, and many informal statements made by individual druggists indicate that the retail drug trade is now divided into three separate camps with respect to a definite attitude toward the question of selling or handling any form of intoxicating liquors.

The members of one contingent have decided that it is the function of the retail drug trade to provide anything that a reputable physician may order on prescription, and, therefore, they do not hesitate to carry and sell whiskey and other intoxicating liquors to be dispensed solely on prescriptions. They also carry non-beverage alcohol which they use for prescriptions and general manufacturing purposes and sell in medicated form in small quantities in accordance with the regulations.

The second class, while handling and selling non-beverage alcohol, have decided that they will not dispense whiskey or other intoxicating liquors even on the prescription of a physician. They sincerely

believe that doctors as a class are in the habit of prescribing too much whiskey and other intoxicating liquors, and would use less if it were more difficult to obtain.

The third class have determined to handle and to sell neither whiskey nor other intoxicating liquors, including even non-beverage alcohol, for any purpose whatever. According to certain members of this class they not only desire to be rid of the inconvenience incident to the supervision of dealers in intoxicating liquors, but they believe that refusal to sell them, even on a prescription of a physician, or to handle alcohol in any form, for any purpose, will be approved by the general public and especially by the officials of the Government charged with the supervision of this traffic; also that the refusal to handle intoxicants of any kind will aid materially in advancing the ethical position of the retail drug trade and go far toward correcting false impressions that have found lodgment in the public mind as the result of the acts of a few unscrupulous members of the trade.

Without attempting an analysis of the attitude of these three sections of the trade, it may be well to call attention to certain important considerations. It is an incontrovertible fact that a large and eminently respectable contingent of practicing physicians believe that intoxicating liquors are of decided value in the treatment of certain diseases and physiological conditions. Their right to prescribe them is specifically conceded by the provisions of the Volstead Act, which thereby imposes upon the Internal Revenue Bureau the exceedingly difficult task of policing their production, distribution and administration.

It would be an ideal condition, in view of the fact that more or less intoxicating liquor is certain to be sold on physicians' prescriptions pursuant to the Volstead Act, if some quasi-official dispensing system could be adopted, possibly under the supervision of the Public Health Service, but the Government appears to be taking no steps looking to the organization of any such system and it seems to me that the retail drug trade might well take this matter up vigorously and pursue it with the greatest possible energy until some adequate system has been devised. Physicians are contending with considerable emphasis that the retail druggists owe it to the medical profession, to which they are the recognized purveyors, and to the public which they must be ever ready to serve, that they shall do more than merely determine that they will not sell intoxi-

cating liquors on physicians' prescriptions; they should use the great influence, which collectively they wield, to aid in working out a solution of this problem in a thoroughly practicable manner.

Under existing conditions, and in default of a semi-official dispensing system, an anomalous situation prevails. The Internal Revenue Bureau, so far from being benefitted by the acts of retail druggists who refuse to handle intoxictaing liquors for the filling of prescriptions, is likely to find itself somewhat embarrassed. It is greatly to the advantage of the Government that, inasmuch as intoxicants may lawfully be sold for medicinal purposes and therefore will be sold, they should be handled by the most reputable merchants in the country and that the traffic should not be turned over to persons of doubtful character. But does not every honest, high-minded retailer who, in any community, refuses to fill prescriptions for intoxicants assist in concentrating the business in the hands of a smaller number, some of whom may be less conscientious, and thus add to the difficulties experienced by the Internal Revenue Bureau in preventing abuses?

Furthermore, even assuming that there are none but honest and reputable druggists in a given community, and that, because there is no central dispensing system, a few of them conscientiously determine it to be their duty to shoulder this burden, is it not apparent that if the filling of all the local physicians' prescriptions for stimulants devolves upon a fraction of the number of the local druggists, their business will soon assume a character that will bring them under undeserved suspicion?

I regret that I cannot sympathize at all with those retail druggists who have refused to take out permits to handle or use non-beverage alcohol as distinguished from whiskey and other beverage forms of spirits. I cannot see how a modern pharmacy can be conducted without the use of alcohol. Of course, a retail druggist may become a peddler of toilet articles, tobacco, stationery, confectionery and soda water, but it seems to me that he must put his professional pride in his pocket and voluntarily scrap a large part of his education as a pharmacist when he decides that he will not use alcohol in any form. Pussyfooting should be beneath the dignity of men boasting a scientific training.

To my mind, the retail drug trade, in this connection presents a clear case of *noblesse oblige*. Because of the high standing of the educated pharmacist, individually and collectively, it is his duty to

assume, in addition to the ordinary burdens of citizenship, the extra load which his intellectual equipment and his special knowledge fit him to carry. He cannot conscientiously sidestep it nor impose it upon another.

If, therefore, you will shoulder your burdens like men and, like men, discharge your obligations to your trade and your country, you will earn the right, whenever your acts are called in question or whenever you find yourselves facing a difficult situation, to come to Washington and, in the tones in which real men speak, demand a square deal at the hands not only of the executive departments but, if necessary, of that august body the Congress of the United States itself.

MISSOURI PHARMACISTS WORK AND PLAY.

The Missouri Pharmaceutical Association, the Travelers' Organization, the Ladies' Auxiliary, the Veteran Druggists and the Missouri Board of Pharmacy were all in convention at the Elms Hotel, Excelsior Springs, June 8–11.

The total attendance was over four hundred. About one hundred and fifty members of the Mo. Ph. A., over one hundred were salesmen and the rest families of members and salesmen, together with fifty candidates for registration.

This meeting in a greater degree than any previous meeting, was decidedly a commercial affair. Addresses, discussions and demonstrations reflected the problems of the average drug store of the day.

Ex-Senator J. Ham Lewis, of Illinois, discussed economic conditions of the world. The Missouri prohibition enforcement officer told the retailers what must be done in order to comply with the law. M. J. Ulber, manager of the Union Depot Store, at Kansas City, explained in detail the plan on which such a store is managed. Samuel C. Henry, General Secretary of the N. A. R. D., outlined the work being done by that organization. Delegates from the A. Ph. A., the St. Louis R. D. A. and other organizations reported. E. G. Binz, of Los Angeles, ex-President of the California Ph. A., reported very satisfactory business conditions on the coast.

Treasurer William Mittelbach showed a balance of $857.48. Secretary H. M. Whelpley reported 772 members. Secretary H. C. Tindall, of the Board of Pharmacy, stated that Missouri had 5241 registered and 255 assistant pharmacists.

The papers presented included, "The 1895 Meeting," by H. M. Whelpley; "Is Your Druggist More than a Merchant?" by C. H. McDonald; "Veterinary Pharmacy," by D. V. Whitney, Jr., "What of the Day and What of the Future of Pharmacy," by H. M. Whelpley.

It was decided to continue *The Missouri Druggist* as a quarterly.

Excelsior Springs was selected for the 1921 meeting, the second Tuesday in June.

Pre-requisite legislation was again endorsed and the committee instructed to ask for such a law. Forty-two new members were elected. County organization is under way in Missouri and will be further pushed, this year. Don S. Freiday, president of the Oklahoma Ph. A., explained the progress of county organizations in his state.

The following resolution, introduced by Fred H. Swift and L. A. Seitz, was adopted.

"Believing that the Government committed a tactical error in 'wishing' the liquor business upon the retail druggist, we, therefore, do resolve, in the interest of law-enforcement and that the high standard of pharmacy may be preserved untarnished, to politely but very firmly decline the 'honor,' standing pat on the proposition that liquor should be distributed through the dispensaries owned, operated and controlled by the government."

Officers for the ensuing year were elected by the various organizations, as follows:

MISSOURI PHARMACEUTICAL ASSOCIATION.

President, Charles H. McDonald, of Rocky Comfort; Honorary President, H. C. Churchill, of Windsor; First Vice-President, Robert Lisch, of Springfield; Second Vice-President, Wm. E. Bard, of Sedalia; Third Vice-President, M. J. Ulber, of Kansas City; General Secretary, Henry M. Whelpley, of St. Louis; Treasurer, Wm. Mittelbach, of Boonville; Editor *Missouri Druggist*, Minnie M. Whitney, of Kansas City; Local Secretary, H. C. Tindall, of Excelsior Springs; Assistant Secretary, Samuel G. Becker, of St. Louis; Council—A. C. Smith (Chairman), of Carrolton; Minnie M. Whitney (Secretary), of Kansas City; Dr. Otto F. Claus, of St. Louis; R. A. Doyle, of East Prairie; H. D. Llewellyn, of Marshall.

MISSOURI PHARMACEUTICAL TRAVELERS' ASSOCIATION.

President, George Bennett, of Kansas City; First Vice-President, W. J. Walsh, of St. Louis; Second Vice-President, C. W. Loomis, of Kansas City; Third Vice-President, William O'Neil, of Chicago; Secretary, C. B. Wilkins, of Kansas City; Treasurer, Dan Liddy, of Kansas City.

LADIES' AUXILIARY.

President, Mrs. Charles Hose, of Kansas City; First Vice-President, Mrs. A. C. Smith, of Carrolton; Second Vice-President, Mrs. R. L. Hope, of Centralia; Third Vice-President, Mrs. C. B. Wilkins, of Kansas City; Recording Secretary, Mrs. C. P. Johnson, of St. Louis; Corresponding Secretary, Mrs. C. A. Peck, of Excelsior Springs; Treasurer, Mrs. C. W. Loomis, of Kansas City; Auditor, Mrs. Charles Schall, of St. Louis.

Six of those who organized the Mo. Ph. A. in 1879 were in attendance and held a reunion.

THE FIFTIETH ANNUAL MEETING OF THE NEW JERSEY PHARMACEUTICAL ASSOCIATION.

The Golden Jubilee meeting of this Association was held in the city of Newark, June 7th to 11th. The initial meeting for the organization of this Association was held in the same city, February 17th, 1890. The session opened with the President's Reception at the Hotel Saint Francis on Monday evening. At the close of the reception, games and dancing were enjoyed by the members and their guests.

The business meetings and entertainments were held at Stetter's Auditorium on Broad Street, some distance away from the hotel headquarters. The first meeting on Tuesday morning was opened with an invocation and an address of welcome by the mayor of the city. A number of delegates were present representing sister State Associations, The National Wholesale Druggists' Association, The National Association of Retail Druggists, American Pharmaceutical Association, and a number of colleges and local Pharmaceutical Associations.

Several of the papers read were of historical interest, appropriate

to the celebration. Others were of a scientific character; noteworthy among these was the paper by R. G. Eccles, M.D., on the "Use of Drugs in Disease." Among the important reports presented were those of the Committee on Pharmacopoeas, Delegates to the Pharmacopoeial Convention, Legislation, and the several reports from the Board of Pharmacy.

The Board presented to the members a copy of the "Schedule of Antidotes for Poisons," which had just been issued as authorized by the amendment to the Pharmacy Law enacted the year prior. This presents in a very convenient form the approved antidotal treatment for the drugs and chemicals more likely to cause toxic effects. This is a commendable feature incorporated in the New Jersey Pharmacy Act. Copies of this schedule can be secured by addressing the Secretary, Edgar R. Sparks, Burlington, N. J.

The entertainment features were a noted portion of the celebration. The principle events were on Tuesday evening, a vaudeville entertainment and an illustrated lecture by Prof. Wm. Mansfield, of Albany, N. Y.; the reception at the home of Mrs. Charles Holzhauer on Wednesday evening; the travelling men's entertainment on Thursday evening; the field sports on the Newark Athletic Field; automobile ride to Newark Port and inspection of the captured German war relics; and an automobile country ride for the ladies with a stop at Washington's Headquarters at Morristown, These were the main entertainment features that were crowded into this busy week.

The Golden Jubilee banquet on Friday evening was the climax of the celebration. Mr. Wm. O. Kuebler was toastmaster, and the principle address of the evening was made by Judge Robert Carey. The surprise of the evening came in the nature of gifts presented to the retiring President, Edward A. Sayre, and to Harry W. Crooks, local Secretary and President-elect, in recognition of their efficient service in making the Semi-Centennial Celebration a grand success.

A memorial volume of 100 pages was prepared by President Sayre. This contained a short historical sketch of the Association, and brief memoirs and portraits of the Forty-eight men who had filled the presidential chair since the organization had been effected. This souvenir will doubtless be highly prized as commemorating the events of the Semi-Centennial session of this Association.

G. M. B.

FORTY-THIRD ANNUAL CONVENTION OF THE PENNSYLVANIA PHARMACEUTICAL ASSOCIATION.

The forty-third annual convention of the Pennsylvania Pharmaceutical Association was held at Harrisburg, June 22 to 24, inclusive, and was one of the best attended and most enthusiastic conventions held in recent years. The Association not only accomplished a great deal by way of disposing of current issues, but inaugurated a program for future work, which contemplates great advances in the progress of pharmacy in Pennsylvania.

The convention was informally opened on Tuesday morning, June 22, by President Robert P. Fischelis.

The report of the Executive Committee referred to the necessity for increasing the annual dues in order to meet the expenses of conducting the business of the association and called attention to the death of eight members during the past year and the addition of one member to the life membership roll.

The Treasurer's report showed a balance of more than five hundred dollars in the current fund of the Association and about four hundred dollars in the invested funds.

Delegates were present from the New York State Pharmaceutical Association, Delaware Pharmaceutical Association, Philadelphia and Pittsburgh colleges of pharmacy and the various local associations throughout the State.

A communication received from Dr. Jacob Diner, Chairman of the Committee on Classifying Pharmacies of the American Pharmaceutical Association, caused some discussion and led to a motion that the Legislative Committee be instructed to draft a bill leading to classification of pharmacies into drug stores and professional pharmacies in Pennsylvania. This was referred to the Committee on President's Address, and that Committee later reported a recommendation to refer the matter to the Legislative Committee, with instructions to make a study of the subject and bring in a report at the next meeting, as to the propriety and feasibility of such legislative action. This recommendation was adopted.

A communication from Dr. E. L. Newcomb, of Minnesota, referring to a plan of increasing the membership in the national and state associations was read and referred to the Committee on President's Address, which later recommended that the initiative on this matter should be taken by the national organizations involved and when this has been brought about, the active support of the Pennsyl-

vania Pharmaceutical Association should be pledged. This recommendation was adopted.

At the second session of the convention Mr. Eugene C. Brockmeyer, General Counsel of the National Association of Retail Druggists, delivered an address on national legislation and the rôle which the pharmacist should play in securing adequate recognition for his calling.

Mr. Brockmeyer dwelled on the organization of a committee consisting of one pharmacist from each state, which would interview candidates for the state and national legislatures on subjects in which pharmacists are interested, so as to determine in advance what the attitude of these men would be on matters affecting pharmacy.

He pointed out that the American Medical Association and other associations had firmly entrenched themselves in years gone by and were now in a position to handle their legislative matters much more easily than do the pharmaceutical associations. Mr. Brockmeyer referred to the excellent opportunity pharmacists have for influencing members of their communities and through them, members of Congress on legislation, that will benefit the public as well as pharmacists. At the conclusion of his remarks Mr. Brockmeyer was given a rising vote of thanks and answered a number of questions that were asked from the floor.

The report of the Committee on Patents and Trade Marks was then read by Dr. F. E. Stewart and dealt largely with the aspirin case that is now pending in the courts of New York.

This was followed by a report of the Committee on Botany read by Dr. Adolph W. Miller which contained many scientific and practical references to the progress of botany.

The third session of the convention opened Tuesday evening at 8 P.M. in the ballroom of the Penn-Harris Hotel and this was the formal opening of the convention. Rev. S. W. Herman, of Harrisburg, offered prayer, after which President Fischelis introduced Mayor Hoverter of the city of Harrisburg, who welcomed the members on behalf of the citizens of that city. His address of welcome was responded to by Dr. L. L. Walton of Williamsport, on behalf of the Association, and by Mrs. David McMurtrie on behalf of the ladies.

The President then called First Vice-President H. J. Mentzer to the chair while he read his annual address. This was a valuable

résumé of the important events and legislation affecting pharmacy that had transpired during the year. It contained many valuable suggestions, which are fully covered in the report of the Committee on President's Address.

At the fourth session the report of the Committee on Drug Market was read by John G. Roberts, Chairman, and contained many valuable contributions on the quality of drugs and chemicals now being obtained from foreign and domestic sources.

P. S. Rohn, of Philadelphia, was then called upon to present the report of the Committee on Membership, and his statement that 350 new members had been taken into the association in the past year was roundly applauded.

Dr. H. V. Arny addressed the convention on the subject of Research in American Pharmacy. Dr. Arny complimented the Pennsylvania Pharmaceutical Association on the active part it has always taken in the development of American Pharmacy and the great amount of research work carried on by its members. He pointed out the many important discoveries in chemistry, pharmacy and allied sciences which had been made by pharmacists working in their laboratories and called attention to the great field of work still before us. This address was highly complimented by various members.

Lieutenant Havinghurst of the United States Army was then called upon to deliver a message on the new Peace-time Army. He pointed out the difference between the regular army of pre-war days and the new army that was now being organized and the wonderful opportunities offered young men for securing not only military training but an education in various crafts.

The President then introduced Hon. J. H. Divel, of Philadelphia, from the office of the Prohibition Director, who spoke at some length on the problem confronting his office in carrying out the enforcement of the prohibition law.

Mr. Divel pointed out the great influence that the pharmacists of the State wield with the community at large and called for their wholehearted coöperation in enforcing the 18th amendment and the Volstead Law. He then offered to answer any questions that might be propounded by the members on the subject of prohibition legislation and a very interesting discussion ensued. This was followed by a motion by Mr. Heffner, of Lockhaven, that a committee of five be appointed to take up with Mr. Divel the matter of prohibi-

tion enforcement and prepare resolutions to be sent to Congress, expressing the attitude of the association on a number of questions concerning the law. The matter was disposed of by referring consideration of the subject to the Association's Committee on Legislation.

The entire afternoon of this day was spent at Hershey, Pa., inspecting the grounds and buildings of the Hershey Chocolate Company, and the members of the Association were the guests of the Hershey Company at a dinner served in one of the pavilions at Hershey, after which the annual entertainment of the Travelling Mens' Auxiliary was held at the auditorium.

The fifth session of the convention was held on Thursday morning, June 24, and was devoted almost entirely to the reading and discussion of papers. The Committee on Papers and Queries headed by Mrs. Charles H. LaWall as Chairman, had been active throughout the year and had secured about 40 papers for this meeting. Lack of time prevented reading all of them, but practically all who were present during the session of the committee and had written papers were given an opportunity to read them.

At 11 o'clock the President announced that Dr. Edward Martin the State Commissioner of Health, had come over from the Capitol to address the members and then introduced Dr. Martin.

In a short address the Commissioner paid a splendid tribute to the Association for the coöperation that had been given him by the pharmacists of the State in all Public Health Measures. He outlined some of the problems now before the department. In doing so, he pointed out where the pharmacists could be of help in each case. His remarks made a profound impression upon the members and at their conclusion, Professor LaWall in rising to thank the Commissioner for his address, also moved that he be made an honorary member of the Association. This motion was carried unanimously with a rising vote.

It is the first time that the Pennsylvania Pharmaceutical Association has elected more than one honorary member in any one year and also the first time that a State Official has been so recognized.

The sixth session of the convention was called to order at 2 P.M., Thursday afternoon, June 24, and Dr. L. L. Walton, of Williamsport, the Chairman, presented the annual report of the Committee on Legislation. Dr. Walton reported that the committee had not been very active during the year, because of the fact that the State Legis-

lature had not been in session. He reported on several phases of National legislation and pointed out what progress had been made for preparing for the next session of the State Legislature.

Following this report Mr. Charles Rehfuss, of Philadelphia, introduced a resolution asking for the appointment of a committee of five retail druggists to take up all matters referring to prohibition legislation with the Prohibition Commissioner's office.

This committee is also to become a part of the Committee on Legislation when State legislation on the alcohol situation is considered. The resolution was passed.

Dr. Walton also reported for the Pennsylvania Board of Pharmacy of which he is the Secretary. In a very interesting manner he pointed out some of the problems with which the Board has to contend and quoted some correspondence on various subjects to show the wide range of activity and the great mass of detail handled by the Secretary's office.

The report of the Committee on President's Address was then presented by the Chairman, Professor Charles H. LaWall, as follows:

REPORT OF THE COMMITTEE ON PRESIDENT'S ADDRESS.

Your Committee on President's Address in submitting this report upon the matters referred to them, wish to express the unanimous opinion that the address of President Fischelis is worthy of the highest traditions of the office, and both in form and substance is to be commended for its clarity, its comprehensiveness and its progressiveness.

Its recommendations give evidence of careful constructive planning for the welfare of the organization, and are worthy of, and have been given, most careful consideration.

Taking them up in the order of their presentation we unanimously voice the following opinions upon the respective subjects:

FINANCES.

The growing costs of administration coupled with the growing needs of our association make it imperative that something should be done to augment our finances. We, therefore, approve of the proposal that our by-laws shall be amended so as to increase the annual dues from two to three dollars, this change to take effect when the dues for 1921 are collected.

We believe, however, that there are certain inherent advantages

in maintaining a treasurer as a distinct office from the Secretary, and we do not approve of the proposal to amend the constitution so as to enable these offices to be combined.

R. L. D. CLASSIFICATION.

We heartily endorse the proposal to join with other State and National Pharmaceutical Organizations in a concerted effort to relieve pharmacists of the stigma of being called Retail Liquor Dealers when they are not so in fact, and approve the recommendation that the Committee of Legislation of this Association be authorized to coöperate in the drafting and passing of suitable legislation to accomplish this aim.

COMPULSORY HEALTH INSURANCE.

We approve of the recommendation that the Legislative Committee of the P. P. A. be instructed to wage an active campaign against Compulsory Health Legislation, and to coöperate toward this end with all other organizations working for this same purpose.

STATE PHARMACEUTICAL EXPERIMENT STATION.

We approve of the recommendation that the Legislative Committee of this Association be authorized to draw up and have introduced into the next legislature, a bill providing for the extablishment of such an institution which should be modeled upon the lines of the Wisconsin station, and that the incoming officers be requested to inaugurate an active, educational campaign leading to the accomplishment of this plan.

ADVISORY COUNCIL REPRESENTATION IN HEALTH DEPARTMENT.

We approve of the recommendation that we endorse by appropriate resolution the sympathetic attitude of the Pennsylvania Department of Health under the able leadership of Dr. Edward Martin, and that a request be made for the appointment of a Pharmaceutical representative upon the Advisory Council of the Health Department. We further feel that such a request should be accompanied by a list of five prominent pharmacists, members of this Association, eligible for appointment to such position, and that this list should be selected by the Executive Committee of the Association.

METRIC SYSTEM OF WEIGHTS AND MEASURES.

We emphatically approve the universal adoption of the metric system for all commercial transactions at as early a date as is prac-

ticable, and that notice of such approval be sent to our Congressman, the American Metric Association and the World Trade Club.

THE PUBLICATIONS OF THE ASSOCIATION.

The fullest and freest independent action and development of an organization are best stimulated by its control of its own publications. Although the increase in the annual dues would enable the offer of one of the two outside publications from whom proposals have been received to take over a great portion of our publication work, we believe that it would be inadvisable at this time to make any definite arrangements with either of these journals. We recommend, therefore, that the publication of the *Pennsylvania Pharmacist* be continued in amplified form, so as to bring about its development as an invaluable asset to our work.

PUBLICITY.

We approve of the recommendation that our Committee on Publicity be authorized to coöperate with the Drug Trade Board of public information, and that a minimum appropriation of $100.00 be made in furtherance of this aim, with such additional aid as may be found necessary, if approved by the Executive Committee.

NATIONAL ASSOCIATION OF RETAIL DRUGGISTS.

We approve of the recommendation that we continue our active affiliation with this Association, and that the customary payment of $25.00 be made for membership.

PENNSYLVANIA MERCHANTS' ASSOCIATION.

We approve of the recommendation that three delegates again be appointed to represent our Association at the annual meeting of this organization, and that our coöperation be offered along lines leading to the improvement of merchandizing conditions.

HONORARY MEMBERSHIP.

We heartily approve of the proposal to add the name of Professor H. V. Arny to the list of our Honorary Members. His prominence and acitivity in American Pharmacy make such recognition of his services both timely and fitting.

MEMORIAL SESSION.

We approve of the recommendation that a time be set aside for a short memorial session in honor of those who have died during the past year. We suggest that such a session be held immediately

after reading the minutes at the opening of the final session on Thursday evening; and also approve of the proposal to have the Secretary include photographs of the prominent association workers among the deceased in our next annual proceedings.

In the report of the delegates to the Pennsylvania Medical Society, the recommendation was made that this Association go on record as favoring the work of the Council on Pharmacy and Chemistry of the American Medical Association, and that the Secretary send official notice of such action to the Association. We unanimously endorse this suggestion.

In concluding this report for formal presentation and action, we wish to impress upon the members that certain very radical changes have been authorized, and that the incoming officers be duly impressed with the necessity of immediately inaugurating such a publicity campaign through the columns of the Pennsylvania Pharmacist and otherwise, as will minimize the possible loss in membership through the raising of the dues.

It will be the twentieth anniversary next year of the occasion of lowering the annual dues from four dollars to two dollars. Surely our Association during these years of activity has more than justified the necessity of only a partial return to the former figure. "Less than a cent a day" is a catch phrase used in the President's address which might be used to good effect in this connection.

The report of the Committee was approved in its entirety and the President then called for the report of the Committee on Nominations, which was presented by J. C. Peacock, the Chairman, as follows:

For President, W. J. Sturgeon, of Kittanning.

First Vice-President, W. B. Goodyear, of Harrisburg.

Second Vice-President, J. N. G. Long, of Philadelphia.

Secretary, Louis Saalbach, of Pittsburgh.

Treasurer, F. H. E. Glein, of Lebanon.

Local Secretary, Ambrose Hunsberger, of Philadelphia.

Member of the Executive Committee for three years, the retiring President, Robert P. Fischelis.

The report of the Committee was received, unanimously approved and the nominees were declared elected to the offices for the ensuing year.

The seventh session of the convention was held Thursday evening at 8 P.M., and was featured by an illustrated lecture, entitled "Who's Who in the P. P. A.," by Professor Charles H. LaWall.

The lecturer had prepared at considerable expense and trouble a large number of lantern slides of past and present members of the Pennsylvania Pharmaceutical Association, who had been active in the conduct of its affairs. These slides were taken from portraits and also from snapshot photographs, and the remarks of the speaker regarding the various personalities shown combined with the slides themselves made a very entertaining address.

After the installation of the officers the meeting adjourned to reconvene for the forty-fourth annual convention in Philadelphia next year, at the time of the Centennial Celebration of the Philadelphia College of Pharmacy.

COMMENCEMENT OF THE PHILADELPHIA COLLEGE OF PHARMACY AND SCIENCE.

The Ninety-Eighth Annual Commencement Week of the Philadelphia College of Pharmacy and Science began with the Baccalaureate services held in the Church of St. Luke and the Epiphany, Sunday, May 30th, at 4 o'clock. The Rev. David M. Steele was the Baccalaureate preacher.

On Monday afternoon, May 31st, the Annual Meeting of the Alumni Association was held in the College building and was unusually well attended. President Robert P. Fischelis in his annual report sounded the keynote of the campaign for a greater College of Pharmacy. He pointed out that the charter of the College had been changed, so as to permit the granting of degrees in the various sciences, and that the name of the institution had been changed from Philadelphia College of Pharmacy to Philadelphia College of Pharmacy and Science.

He referred to the work of the Alumni Association during the year and pointed out that arrangements had been made to secure a memorial tablet in honor of the graduates and students of the College who served in the World War and in special recognition of those who made the supreme sacrifice.

He announced that the Alumni Association was on a better financial footing than it had ever been before, and that the nucleus of an endowment fund for the work of the Alumni Association alone had been started by the purchase of a $100 Liberty Bond. He urged the Alumni of the College everywhere to lend their aid in the

coming campaign for endowment and buildings, to be conducted by the College.

Professor Clement B. Lowe, Chairman of the Committee on Necrology, reported that 59 members of the Association had died during the year, among them Frank G. Ryan, of the Class of 1884, who had been president of the Parke Davis Company for a number of years.

The following officers were elected for the ensuing year:

President, Wm. Duffield Robinson, M.D., '76

First Vice-President, Russell T. Blackwood, '91.

Second Vice-President, M. M. Smith, '13.

Corresponding Secretary, Ivor Griffith, '12.

Treasurer, Wm. H. Gano, '84.

Board of Directors—Mrs. Charles H. LaWall, '04; Dr. P. S. Pittenger, '09; Mrs. J. C. Peacock, '96; Dr. Mitchell Bernstein, '09; Dr. Eugene G. Eberle, '84.

Mr. Samuel C. Henry, Secretary of the N. A. R. D., was elected honorary member of the Alumni Association.

The Professors' and Trustees' supper to the graduating class was held in the Museum of the College Monday evening, May 31st, Dean Charles H. LaWall, presiding. Brief addresses were made by President Howard B. French, of the College, members of the Faculty and a number of the graduates.

The Annual Reunion and Banquet of the Association was held at Mosbach's Casino, Tuesday evening, June 1st, and more than 200 Alumni of the College turned out for this affair. Dr. Robert P. Fischelis, the retiring President of the Alumni Association, was the toastmaster. President Howard B. French, in his address, told of the two million dollar endowment and building campaign which the College was about to undertake and showed the first architect's drawings of the proposed College buildings on the Philadelphia Parkway.

Mr. French announced that the Park Commission was favorably inclined toward granting a site for the College and that the plans which are now maturing provide for a plant consisting of six buildings which will house the various departments of the College and also provide ample facilities for research work.

Other speakers at the banquet were Dean Charles H. LaWall, Dean J. W. Sturmer, Professor E. Fullerton Cook, and members of the quinquennial reunion classes.

One of the features of the reunion and banquet was the unveiling of the memorial tablet in honor of the graduates and students of the College who had been in the service. Dr. Wm. Duffield Robinson, the President-elect of the Alumni Association, made the address in connection with the unveiling, and Miss Ruth Ernestine Cook, daughter of Prof. Cook, unveiled the tablet.

The 98th Annual Commencement wound up the activities of the week and was held at the American Academy of Music, Broad and Locust Streets. Prayer was offered by Rev. J. Gray Bolton, and the address to the graduating class was made by the Hon. John Wanamaker. The honorary degree of Master in Pharmacy was awarded to Dr. Frederick B. Kilmer, of New Brunswick, N. J., and Dr. Francis E. Stewart, of Philadelphia. The College prizes were awarded by members of the Faculty and Board of Trustees, the awards being read by Dean LaWall and the Alumni prizes presented by Dr. Robert P. Fischelis, the retiring President of the Alumni Association.

The list of graduates in the various courses follows:

GRADUATING CLASS.

Ninety-Eighth Session.

1919–1920.

Bachelor of Science in Pharmacy and Chemistry (B.Sc.).

Name.	Thesis.	Where From.
Slothower, George	*Rhus venenata*	Pennsylvania
Slotter, Charles Franklin	Studies on Commercial Varieties of Nux Vomica	Pennsylvania

Doctor in Pharmacy (P.D.)

McNelis, Miss Anna Camillus (P.C.)	*Ampoules*	Pennsylvania

Bachelor in Pharmacy (Phar.B.).

Buehler, Luther Alexander	*Japan Wax in Ointments and Cerates*	Pennsylvania
Reighter, William Erle	*Tablet Triturates*	Pennsylvania

Pharmaceutical Chemist (Ph.C.).

Marxuach, Acislo	*Bixa Orellana*	Porto Rico
Randolph, John Roanoke	*Composition of Manganese Dioxide, U. S. P.*	Missouri

Name.	Thesis.	Where From.
Steves, Bertram Clarence	*The Saponification of Fats with Alkali Carbonates*	New York
Steward, Charles Robert	*The Relative Sensitiveness of Some of the Tests Used in the Detection of Dextrose in Urine*	Idaho

GRADUATE IN PHARMACY (PH.G.).

Abrahamson, Oscar	*Modern Merchandising*	Pennsylvania
Aidenbaum, Philip Lincoln	*Retail Drug Store Advertising*	Pennsylvania
Bell, Harry	*Alcohol*	Pennsylvania
Berman, Benjamin	*Economic Lichens*	Virginia
Best, Elton McCoy	*Mercurochrome 220*	N. Carolina
Bloomfield, Morris	*Glyceride Tinctures*	Pennsylvania
Bornstein, Miss Rebecca	*Sponges*	Florida
Bricker, Chester William	*Tolu as a Coating for Pills*	Pennsylvania
Brown, Russell Leo	*The Cut-Rate Drug Store*	Pennsylvania
Buch, Harry Harris	*Blood Transfusion*	Pennsylvania
Budin, Barnett	*A Better Extract of Coffee*	Pennsylvania
Burton, Robert Jefferson	*Non-Alcoholic Flavors*	Pennsylvania
Byers, Wayne Emmanuel	*The Pharmacological Studies of the Ipecac Alkaloids*	Pennsylvania
Carstater, James Cowling	*Compressed Tablets*	Pennsylvania
Coffman, Charles Wayne	*Chamois Skins*	Pennsylvania
Cohen, Mrs. Hassie D. G.	*Fluidextract of Bitter Orange Peel*	Pennsylvania
Coleman, David	*Cold Cream*	Pennsylvania
Cramer, Richard Edward	*Virus Vaccinicum*	New Jersey
Daly, Thomas Joseph	*Dichloramine T and Its Allied Products*	Pennsylvania
Delle, Walter Hughlee	*Variations of the Teaspoon*	Pennsylvania
Derick, George Coyle	*Reducing the Alcohol in Tinctures*	Pennsylvania
Dry, Robert Levi	*Prescription Filling and Incompatibilities*	Pennsylvania
Edge, Nicholas Joseph	*Mercurochrome 220*	Pennsylvania
Fenton, Percival Norman	*Benzyl Benzoate and Ways of Administration*	New Jersey
Flaherty, Richard Cyril	*A Commercial Source of Tragacanth and Detection of Its Adulterant*	Pennsylvania
Fleisher, Joseph Charles	*Insecticide —Their Preparations and Applications*	Pennsylvania
Forman, Joseph Maurice	*Hydrocyanic Acid Gas*	Pennsylvania
Furman, Frank Hagenbuch	*Buchu Leaves and Adulterants*	Pennsylvania
Galloway, Clarence Moore	*The Microscope—A Scientific Adjunct to Pharmacy*	Pennsylvania
Gold, Maurice George	*Histology of Cocillana Bark*	Russia
Green, Samuel	*Streptococcus Hemolyticus and Its Significance in Diseases*	Pennsylvania

Name.	Thesis.	Where From.
Haberstroh, Ambrose Rea	*Adulteration and Identification of Drugs*	Pennsylvania
Haines, Howard Jacob	*Liquid Petrolatum*	Pennsylvania
Hargreaves, Miss Lottie	*Assay of Commercial Varieties of Hydrogen Peroxide*	Pennsylvania
Hartman, Jennings Bryan	*Depilatories and Deodorants*	Pennsylvania
Harvey, John Parker	*Dental Drugs and Chemicals*	Ohio
Heckert, Paul Franklin	*Cane Sugar—History and Composition*	Pennsylvania
Jacobs, Daniel LeRoy	*Drugs That Enslave*	Pennsylvania
Knouse, John Allan	*Compounding and Dispensing Rectal Suppositories*	Pennsylvania
Kramer, Nathan Henry	*The Antiseptic Flavine*	Pennsylvania
Kwiatkowski, Adam John	*Monohydrated Sodium Carbonate*	Pennsylvania
Laskowski, Adolph Leon	*The Discoveries of Louis Pasteur*	Pennsylvania
LaWall, William Harland	*Intestinal Parasites*	Pennsylvania
Lowenthal Joseph	*My Experience in an Italian Drug Store*	Pennsylvania
McCauley, William Aloysius	*Ambrine*	Pennsylvania
McGavin, John Thomas	*Pollination of Plants*	Pennsylvania
McWilliams, Lester Mahlon	*Benzyl Benzoate*	Pennsylvania
Manus, Joseph	*The Amount of Alkaloids in Various Preparations of Elixir Iron, Quinine and Strychnine*	Pennsylvania
Martin, Reuben Kaufman	*Arsenic—Its Toxicology and Therapeutics*	Pennsylvania
Martinez, Miss Matilde	*Dioscorea*	Cuba
Mear, James Frederick	*Manufacture of Pottery*	Ohio
Merklee, Benjamin Franklin	*Cochineal*	Pennsylvania
Miller, John Harold	*Acriflavine*	Pennsylvania
Moran, Miss Rose Mary	*Drug Store Advertising*	Pennsylvania
Motley, Ferdinand	*Mercury (Historical)*	New Jersey
Moyer, Irvin	*Manufacture of Perfumes*	Pennsylvania
Muchnick, David Samuel	*Apothesine—Local Anesthesia*	Pennsylvania
Myers, William Bryan	*Helleborus Niger*	Pennsylvania
Nauman, Roy Augustus	*Effect of Prohibition on Medicines*	Pennsylvania
Neiffer, Grover Wellington	*Poisons and Their Antidotes*	Pennsylvania
Nicholl, Ellwood Ervin	*Show Windows*	Pennsylvania
Oswald, Anthony Cyril	*Hyoscyamus*	New York
Pawling, William Luther	*Sugar—Its Sources and Commercial Manufacture*	Pennsylvania
Peters, Cyrus Adam	*Spiritus Aetheris Nitrosi*	Pennsylvania
Pine, Lynwood Carleton	*Possible Sources of Potash*	New Jersey
Rebarber, Isidor	*Microscopical Differences in Stramonium Leaves and Its Adulterant, Xanthium Strumarium*	New York

Name.	Thesis.	Where From.
Reber, Robert Elmer	*Vulcanization of Rubber*	Pennsylvania
Reese, Charles Christian	*Celluloid*	Pennsylvania
Redinger, Lawrence Ernest	*Assay of Aspirin*	Pennsylvania
Rice, Miss Irene Esther	*Douglas Balsam of Fir*	Pennsylvania
Roatch, Karl Hobart		Pennsylvania
Rose, Herbert Leon	*Cultivation of Camphor and Its Home Economics*	Delaware
Ruplis, John Albert	*Phenolphthalein*	Pennsylvania
Sachs, Samuel Frederick	*Toilet Lotions With Benzoin*	Maryland
Schaefer, Joseph William	*The Deterioration of Ethyl Nitrite Content in Spirit of Nitrous Ether*	Pennsylvania
Schaeffer, Charles Raymond	*The Cascara Industry in the United States*	Pennsylvania
Schampan, Alexander	*Fluidextract of Conium*	Pennsylvania
Search, George Bruce	*Veronica Officinalis*	Pennsylvania
Seiple, Thomas Chester	*Glycerinum U. S. P.*	Pennsylvania
Seitzinger, William Oscar	*Industrial Uses of Ethyl Alcohol*	Pennsylvania
Senkowski, Ladislaus Anthony	*Olive Oil and Its Manufacture*	Pennsylvania
Senseman, William Thomas	*The Vulcanization of Rubber*	Pennsylvania
Shorr, Orrin	*Hydrocarbon Salicylate*	New Jersey
Sidler, Miss Mae Jennison	*Ballota Nigra Adulterant*	Pennsylvania
Simpson, Ernest Biddle	*Vanilla and Its Preparation (Tincture N. F.)*	Pennsylvania
Smith, Frank MacFarland	*Soft Soap*	Pennsylvania
Smith, Samuel Lester	*Toluene*	Pennsylvania
Spencer, Lorance Robert	*Advertising*	Pennsylvania
Sukonick, Louis	*Hydrogen Dioxide*	Russia
Sutty, Arthur Paul	*Poison Gases and the Method of Testing Canisters for Efficiency Against Them*	Massachusetts
Swavely, Leon William	*Tincture of Cardamom*	Pennsylvania
Tamayo, Miguel Ocroa	*Picramnia Pentandra*	Cuba
Vogel, Mrs. Mary Lynch	*Practical Disinfection in the Sick Room*	Pennsylvania
Weidman, Isaac Snader	*The Influenza Bacillus*	Pennsylvania
Weinberg, Isadore Thomas	*Spiritus Aetheris Nitrosi*	New Jersey
Weinberg Maurice	*Barium Sulphate*	Pennsylvania
Weisbard, Leonard	*Physico Therapy Quackery*	Pennsylvania
Weise, Frank Herman	*Grindelia*	Idaho
White, Walter Williams	*Argyrol*	Pennsylvania
Wible, Hollis McCarrell	*The Presence of Boric Acid and Borax in Commercial Talcum Powders*	Pennsylvania
Wien, Stuart Eugene	*A French Pharmacy*	Pennsylvania
Wilson, Morris Faust	*Alcohol, Next to Water, the Most Valuable Chemical*	Pennsylvania

Name.	Thesis.	Where From.
Worrall, Wesley	*Ichthyol*	Pennsylvania
Young, Harry Blake	*Cork*	Pennsylvania
Zook Carl Elliott	*Veratrum Viride vs. Symplocarpus Foetidus*	Pennsylvania

STUDENTS WHO HAVE COMPLETED THE COURSE AND WILL RECEIVE THEIR DIPLOMA UPON REACHING THEIR MAJORITY.

Antes, Oliver Henry	*Atmospheric Fractionation*	Pennsylvania
Benedetti, Carlos Manuel	*Notes on Solanum Dulcamara*	Panama
Brown, Edwin Tyson	*Stable and Palatable Emulsions of Benzyl Benzoate*	Pennsylvania
Cantarow, Miss Rose	*Cork*	Connecticut
Freeman, Lewis Good	*Saturated Solutions*	Pennsylvania
Johnson, Charles Emerson	*Elaeagnus Longpipes*	New Jersey
Keuper, Joseph Thomas	*Organization of the Pharmacists in a Small City*	New Jersey
Kramer, Matthew	*Drosera, N. F.*	Pennsylvania
McAllister, Lory Curley	*Serum and Vaccine Therapy*	Pennsylvania
Martinez, Miss Carmen Aurora	*Convolvulus Scammonia and Ipomea Orizabensis*	Cuba
Moore, Clair Channell	*Manufacture and Uses of Pyralin*	Pennsylvania
Shenk, Robert William	*Salvia Triloba vs. Salvia Officinalis*	Pennsylvania
Widman, Lester Francis	*Althaea*	Pennsylvania

STUDENTS WHO HAVE COMPLETED THE COURSE AND ARE ELIGIBLE FOR THE DEGREE OF GRADUATE IN PHARMACY WHEN OTHER GRADUATION REQUIREMENTS SHALL HAVE BEEN MET.

Aument, Harry Groff	*Paraffin Dressings*	Pennsylvania
Bleeden, Miss Rose	*The Manufacture of Brushes*	Pennsylvania
Cline, Hubert Lee	*Assaying Phosphoric Acid*	Pennsylvania
Greeninger, Miss Florence Minerva	*Rubber Goods*	Pennsylvania
Hoey, Miss Helen Lanning	*The Exit of Alcohol in Pharmacy*	Pennsylvania
Jaeger, Miss Marie Gertrude	*The Evolution of Certain Pharmaceuticals*	Pennsylvania
Koch, Charles Nicholas	*Biological Products*	Pennsylvania
Kurz, William Rabold	*Cotton*	Pennsylvania
Law, Harold Noble	*Ichthyol*	Pennsylvania
Leh, William Jennings Bryan	*Making Soap from Olive Oil That Has Been Used in the Preparation of Nuts*	Pennsylvania
Leigh, Francis Bernard	*Modern Pharmacies*	New Jersey

Name.	Thesis.	Where From.
Manus, Richard	*The Making of Syrup of Wild Cherry by Maceration*	Pennsylvania
Pitt, Charles Henry	*The Manufacture of Ethyl Nitrite*	New Jersey
Raymond, Henry Simon	*Fluid Extract Conium*	Pennsylvania
Reeves, Miss Joanna Stretch	*Sphagnum Moss, a Substitute for Cotton as a Surgical Dressing*	New Jersey
Roth, Herbert Joseph	*Rennet*	Pennsylvania
Seraballs, Enrique Aulet	*Psidium Pomifer*	Porto Rico
Starkey, Isaac Wayne		N. Carolina
Vidaurreta, Saturnino	*Colloids*	Honduras
Weidemann, Warren Rawson	*An Examination of Solanum Nigrum Leaves*	Pennsylvania
Zapp, Mathias Augustus	*Senecio Aureus*	Idaho

CERTIFICATE OF PROFICIENCY IN CHEMISTRY.

Curtis, Thomas F	New Jersey
Harnly, Paul G	Pennsylvania
Kantner, Brooke Bryon	Pennsylvania
Murray, Allen Foster	Pennsylvania
Rickart, G. Emerson	Pennsylvania

CERTIFICATE IN BACTERIOLOGY.

Bernstein, Miss Nita N	Pennsylvania
Bossart, Miss Ruth A	Pennsylvania
Buchanan, Raymond Joseph, Ph.G	Pennsylvania
Kahn, Charles	Illinois
Koenig, Otto L., Jr., P.D	Pennsylvania
Kopp, Raymond Harold	Pennsylvania
Little, Percey Hayden,	Pennsylvania
Lubarsky, Abraham R., Ph.G	Pennsylvania
Moyer, Raymond J., P.D	Pennsylvania
Nicholl, Robert Milton	Pennsylvania
Rosenfeld, Lawrence Marx, P.D	Pennsylvania
Scott, John C	Pennsylvania
Sharadin, Ralph C., P.D	Pennsylvania
Steinel, Edward J	Pennsylvania
Tamplin, John S	W. Virginia
Van Norden, Miss Frances	New Jersey
Wetzel, Harry Woodall	Pennsylvania

CERTIFICATE IN CLINICAL CHEMISTRY.

Friedman, William Leonard, Ph.G	Pennsylvania
Roatch, K. Hobart	Pennsylvania
Rosenfeld, Lawrence M., P.D	Pennsylvania
Sharadin, Ralph C., P D	Pennsylvania
Tamayo, Miguel A	Cuba
Van Norden, Miss Frances	New Jersey

CERTIFICATE IN COSMETICS AND PERFUMES.

Name.	Where From.
Benedetti, Carlos Manuel	Panama
Hartman, Jennings Bryan	Pennsylvania
Seraballs, Enrique	Porto Rico

CERTIFICATE IN PHYSIOLOGICAL ASSAYING.

De Virgiliis, Arturo	Italy
Raymond, Henry Simon	Pennsylvania
Schaefer, Joseph William	Pennsylvania

CERTIFICATE IN TECHNICAL MICROSCOPY.

Groblewski, Alphonse	Pennsylvania
Steward, Charles Robert	Idaho

ADDRESS OF PRESIDENT R. P. FISCHELIS OF THE ALUMNI ASSOCIATION OF THE PHILADELPHIA COLLEGE OF PHARMACY. (In Abstract.)

As we meet to conduct the business of the fifty-sixth annual meeting of the alumni association of the Philadelphia College of Pharmacy, we are on the eve of the one hundredth anniversary of the founding of our Alma Mater and there loom up before us visions of an even greater future in the coming years than the wonderful advances which our college has made in the past century of its existence.

It is for us, the living and active alumni, to see to it that these visions of the future shall not end in the mere building of air castles but rather that we set out to accomplish them with an earnest purpose, enthusiasm and unbounded willingness to work so that in the years to come our followers may say of us as we now say of the founders of our college "They builded better than they knew."

If anyone had suggested to me five years ago that a graduate of the Medico-Chirurgical College might at some time become the president of the Alumni Association of the Philadelphia College of Pharmacy, I would probably have looked at him in blank amazement and wondered whether he was in his right mind, yet that seeming impossibility has become a reality. I cannot refrain from mentioning this fact because I doubt whether there ever was a merger of two rival institutions where such complete harmony has obtained among the respective alumni since the very beginning of

their Association. The pharmacy department of the Medico-Chirurgical College was the strongest department of that institution in many ways and its alumni, at the time, considered it a misfortune that circumstances, over which the department of pharmacy had not one iota of control, compelled its virtual abandonment and subsequent merger with the Philadelphia College of Pharmacy. However, the four years that have passed demonstrate clearly that although many of the traditions and individualities of the Medico-Chirurgical College have been submerged, as was of course inevitable, the spirit of the two institutions was so similar that the Medico-Chi graduates have found it comparatively easy to assume the rôle of alumni of the Philadelphia College of Pharmacy. Personally I can say that no more hearty support was ever accorded a president of the Medico-Chi Pharmacy Alumni Association by his fellow alumni than has been accorded me this year on the part of the Philadelphia College of Pharmacy alumni. I feel it is only just that this should be made a matter of record for I know that "Chi" alumni everywhere will consider it a compliment to them and will feel that their loyalty as adopted children of the Grand Old Mother Philadelphia College of Pharmacy is not for one moment misplaced.

We had a busy year and it is a pleasure to report that the Alumni Association has found it comparatively easy to resume its pre-war activities and in some instances enlarge upon them.

Everywhere about us there has been likewise a speedy resumption of peace-time activities. Although technically still at war, the country has long since turned its back upon the years of horror, which left their marks upon us all to a greater or less extent, and is looking forward to years of tranquility. But let us not forget too quickly the sacrifice of those who gave their all for the future happiness of the world. As I write these lines there comes to my mind a verse which on this memorial day is particularly appropriate:

"The tumult and the shouting dies;
The captains and the kings depart.
Still stands Thine ancient sacrifice;
An humble and a contrite heart.
Lord God of Hosts, be with us yet,
Lest we forget! Lest we forget!"

We shall never forget the boys of the Philadelphia College of Pharmacy, nearly one thousand strong, who answered the call to the colors. A bronze memorial tablet to be erected in their honor

in the college building has been procured by the Alumni Association and will be dedicated at our annual reunion to-morrow evening. I want to express the thanks of the Association to the committee, consisting of Messrs. J. S. Beetem, W. H. Gano and F. P. Stroup, for their prompt and untiring efforts in making possible the dedication of this memorial to our alumni, who served and those who made the supreme sacrifice, at this early date. The funds required were made available by the contributors to the Alumni Sustaining Fund. Surely these contributors will feel proud to have made this lasting memorial to our boys possible.

Our college is to be congratulated on the enlargement of the scope of its charter. It is now legally, what it has long been practically, The Philadelphia College of Pharmacy and Science.

I recommend that the Board of Directors of the Alumni Association be empowered to change the name of the Alumni Association to correspond with the new legal title of the college and that our constitution and by-laws be so revised as to make them conform with the new name.

I further recommend that we establish two classes of membership in the Alumni Association, active membership and associate membership. Active members shall be those who graduate from any of the pharmaceutical or science courses of our college and have a degree conferred upon them. Associate members shall be those who attend and complete special courses in our college, for which no degrees are awarded but certificates are given. Associate members may be appointed upon standing or special committees of the Association but shall not have the right to vote or hold office, nor to occupy the chairmanship of committees.

The object of this recommendation is to include in the Alumni Association all former students of the college no matter what courses or partial courses they have taken and at the same time restrict the active management to those holding the degrees of the college. The latter procedure is necessary in my estimation in order to maintain the prestige of the college among institutions of the highest grade.

In years gone by, the Alumni Association depended in a large measure upon the college for its financial support. In the past two years an earnest attempt has been made to make the association self-sustaining. This is as it should be. So far we have depended entirely upon volunteers for our sustaining fund. This has resulted in placing the burden upon the few for the benefit of the many. I

would recommend fixing the annual dues of all members at 50 cents per annum with the proviso that no member shall ever be charged more than $1.00 for arrears no matter how great his arrearage may be. This may not sound business-like at first but I am connected with an alumni association which has found this the most effective way of sustaining itself. The man who pays his dues regularly will hand you a dollar for two years dues whenever you let him know it is due and the fellow who ignores bills for five years and then becomes reticent about attending alumni reunions or college affairs because he is behind will feel happy when he is told he only owes $1.00, and may become an active worker when under another system he would probably never go near the college again.

An Investment Fund has been started by the purchase of one $100 Fourth U. S. Liberty Bond. Should any of our members desire to add to this fund by contributions of Liberty Bonds or cash in substantial amounts, either would be most gratefully received. The association officers are very desirous of securing an Investment Fund of $10,000 in order to provide a regular source of income which will be most faithfully and carefully used to advance the interests and good-name of our century-old college. Of course, any contribution to the above-mentioned fund must be made without prejudice to any fund the college may endeavor to raise.

For the first time in a great many years the Alumni Association this year extended a formal welcome to the first year class of the college. A high grade entertainment was provided by the committee on reception and a splendid address by Hon. Franklin S. Edmonds featured the affair. Practically the entire class and a good representation of alumni attended. It is very important that incoming students be made to feel at home at the college and that the Philadelphia College of Pharmacy spirit be displayed to them at the earliest possible moment. I, therefore, recommend that a reception and entertainment by the Alumni Association to the incoming classes be considered as an annual custom and that it be held before Thanksgiving day each year.

It is a pleasure to note that eight alumni of the Philadelphia College of Pharmacy were elected to the Committee of Revision of the United States Pharmacopoeia at the recent Pharmacopoeial Convention, and it is still more gratifying for us that the high honor of being Chairman of this committee has again fallen to a Phila-

delphia College of Pharmacy graduate and a member of the college faculty, Prof. E. Fullerton Cook.

The centennial of the college has been alluded to before in this address. It is indeed a great event, for not only does it mark the one hundredth birthday of our college but also the one hundredth anniversary of the beginning of pharmaceutical education in America. The event must be celebrated as befits an occasion so auspicious and so far reaching in interest.

For a number of years it has been suggested that the college would soon acquire a site on the Philadelphia Parkway upon which new buildings could be erected. This site was to be the gift of the City of Philadelphia. In order to ascertain how the Alumni Association might be of help in this matter, a special meeting was called last fall of the Board of Directors of the alumni which was attended by President French and Mr. George M. Beringer, the chairman of the Board of Trustees. The chief development growing out of this meeting was the appointment of an alumni committee to assist in securing a site for the college. It had been clearly brought out at the meeting that securing a proper site was the key to the program of expansion.

The committee we appointed has interviewed members of the Parkway Commission and has been advised that the possibilities of securing a site on the Parkway are at least fair.

I would like to see our Alumni Association go on record to the effect that we will undertake a campaign to raise the necessary money for a suitable site if the college authorities are unable to convince the city that such a site should be given to us free. I believe the Philadelphia College of Pharmacy has a perfect right to ask the municipality, the State and private individuals for money with which to build an institution that will be of constant service to the people of this country, but, ladies and gentlemen, we will also have to do some contributing ourselves. When the time comes it will be necessary for every alumnus of this college from the President down to the poorest member of the graduating class to "dig deep" and add according to his means to whatever fund we may have been able to collect from others. The combined funds no matter how much they may amount to will hardly be sufficient to do all that we can and want to do for pharmacy and for the people of this country through our great institution.

I am greatly in favor of having the alumni association provide some one definite thing toward the enlarged college, either a building, or a site, or the equipment of some part of the structure. Whatever it may be it should be in the name of the Alumni Association so that in the years to come, graduates may point with pride to this definite part of the college which they helped to provide.

SUMMARY OF THE PROCEEDINGS OF THE 1920 MEETING OF THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES.

By Theodore J. Bradley,

SECRETARY.

The Twenty-first Annual Meeting of the American Conference of Pharmaceutical Faculties was held at the New Willard Hotel, Washington, D. C., on May 5–6, 1920. Delegates were in attendance from thirty-three member colleges located in twenty-five states. The President, Dr. Wortley F. Rudd, of the Medical College of Virginia School of Pharmacy, presided at all sessions.

After the roll-call of delegates, Professor John Uri Lloyd, of Cincinnati, opened the meeting with a message of greeting from the American Pharmaceutical Association.

Dr. Rudd's presidential address was well worked out and cordially received, and it contained several recommendations which were adopted as follows:

1. That the Conference take steps to secure an investigation and classification of the pharmacy schools of the United States.

2. That the Conference coöperate with the American Pharmaceutical Association and the National Association of Boards of Pharmacy to secure pre-requisite laws in states which have not yet enacted such laws.

3. That the President, Secretary-Treasurer and Chairman of the Executive Committee shall act as a special committee to secure publicity for the work of the Conference.

4. That the President, Secretary-Treasurer and Chairman of the Executive Committee shall hold a meeting in advance of the annual meeting, at the expense of the Conference, if these officers deem such a preliminary meeting necessary.

5. That the minimum course leading to a degree from a member college in the Conference shall be three years, beginning with the class entering in 1925.

Dr. C. C. Pierce, Assistant Surgeon General of the United States Public Health Service, described the work being done by his department to educate the people of the United States on the seriousness of the menace from venereal diseases, and he asked for the cooperation of the members of the Conference in this work. After a lengthy discussion, it was unanimously voted to approve the campaign against venereal diseases and that the Conference will cooperate in this campaign in every way that circumstances governing its member colleges will permit.

The report of the Secretary-Treasurer, Dean Theodore J. Bradley, of the Massachusetts College of Pharmacy, showed that there were forty-five member colleges in the Conference. The cash receipts during the year were $1,126.95 and the expenditures were $794.63. On April 30, 1920, there was a balance of $993.59 in the treasury.

Reports of the various standing and special committees were received as follows:

Executive Committee—Henry Kraemer, of Michigan, Chairman.

National Syllabus Committee—T. J. Bradley, of Massachusetts, Chairman.

Standing Committee on Higher Educational Standards—W. J. Teeters, of Iowa, Chairman.

Standing Committee on Faculties—Zada M. Cooper, of Iowa, Chairman.

Standing Committee on Curricula and Teaching Methods—C. B. Jordan, of Indiana, Chairman.

Standing Committee on Activities of Students and Alumni—R. A. Lyman, of Nebraska, Chairman.

Standing Committees on Uniform College Bulletins—C. O. Lee, of Indiana, Chairman.

Standing Committee on Relations of Pharmacy Schools and other Professional Schools—E. F. Kelly, of Maryland, Chairman.

Standing Committee on Examination Questions—E. A. Ruddiman, of Tennessee, Chairman.

Standing Committee on Research—Albert Schneider, of Nebraska, Chairman.

Special Committee to Consider and Report on the Question of

the Establishment of Two Classes of Pharmacists and Corresponding Courses in Colleges of Pharmacy—Jacob Diner, of New York, Chairman.

Special Committee to Work Out Methods of Presenting the Advantages of Pharmacy as a Calling to High School Students—J. A. Koch, of Pittsburgh, Chairman.

Special Committee to Prepare and Distribute Information on Pre-requisite Legislation—W. B. Day, of Illinois, Chairman.

All of these committee reports will be published in the proceedings of the Conference and several of them will appear in other publications.

The West Virginia University Course of Pharmacy was elected to membership in the Conference.

The following officers were elected for the ensuing year:

President, Wilber J. Teeters, of Iowa City, Iowa.

Vice-President, Washington H. Keigler, of Charleston, South Carolina.

Secretary-Treasurer, Theodore J. Bradley, of Boston, Massachusetts.

Chairman of the Executive Committee, Rufus A. Lyman, of Lincoln, Neb.

Members of the Executive Committee—Julius A. Koch, of Pittsburgh, Pennsylvania, and Wortley F. Rudd, of Richmond, Virginia.

Member of the Syllabus Committee, 1920–1927, William C. Anderson, of Brooklyn, New York.

BOOK REVIEWS.

LABORATORY MANUAL OF COLLOID CHEMISTRY. By Emil Hatschek. Small 8vo., 131 pages, contents, indexes and twenty illustrations. Philadelphia, P. Blakiston's Son & Co. $2.00 net.

If we could make the somewhat grotesque supposition that Thomas Graham might return in the flesh, he would be greatly astonished to see how his acorn has grown to a forest. Introducing, as he did, more than half a century ago the terms "colloid" and "crystalloid," and describing many striking and interesting procedures based on the differing properties of the two types of substances, the deeper significance of his researches remained for a long while unknown.

For many years, physicists and chemists were wont to speak of the two types as representing different classes of substances, but we now know that the differences are those of condition and that any substance may assume either state. Colloidal conditions of even the very active elements, such as sodium, can be obtained. It appears, indeed, that some of the phenomena that have been designated as liquid crystals, may be really due to colloid suspension.

The author of this book is so well known in the field to which it is devoted that we may feel sure that it will be of high merit. It is especially so because it deals with a phase of the subject that has not received as much attention as needed, namely, the actual work in preparing and studying colloids. A good deal of the literature has been taken up with the theory and applications, and a book, such as is here presented, which gives practical details of many experiments will be especially welcome to the older chemist whose studies date from time when phenomena were merely given passing notice in the instruction. In fact, as one writer lately said, some of the most important facts in physical chemistry were presented in a highly indirect way. Allotropism was discussed always under ozone, dimorphism under sulphur, colloid state under silicic acid, and catalysis in connection with the production of oxygen from potassium chlorate.

The work has nineteen chapters, each devoted to a special phase of colloid phenomena. The first chapter takes up the general methods of procedure, pointing out the great importance of cleanliness, and the liability of error from the inferiority of the glass used in many of the laboratory vessels. Test-tubes are often found that in a short time will communicate enough alkali to pure water to produce a pink tint with phenolphthalein. Such tubes are quite unfit for use. The difficulty of cleaning vessels after certain experiments is pointed. Thus, while suspensoid sols are generally easily removed, the emulsoid forms are much more difficult. Traces of gelatin or albumin are difficult to remove and very objectionable if not removed. A special chapter is given to the methods of producing the curious rings known as the Liesegang phenomenon. The original method with chromated gelatin and silver nitrate is given and then several other forms, of which those with silicic acid gel will be of special interest to mineralogists, since banded deposits are not infrequently noted in minerals.

The book is a valuable addition to the literature of the subject,

and will be of especial value to those chemists engaged in teaching general chemistry, as it gives methods of performing a large number of interesting and instructive experiments. H. L.

TREATISE ON GENERAL AND INDUSTRIAL INORGANIC CHEMISTRY. By Dr. Ettore Molinari. Second edition, translated from the fourth revised and amplified Italian edition, by Thomas H. Pope, B.Sc., F.I.C., A.C.G.I. 8vo., xix–858 pages and index, 328 illustrations and two phototype plates. Philadelphia, P. Blakiston's Son & Co. $12.00 net.

This handsome, well printed and well bound volume contains an immense amount of information on a wide range of subjects. It differs from most books within the field, by having a considerable space devoted to the history of chemistry and to the general principles of the science as now taught. In fact, some statements are made in regard to early civilizations, going back to the ancient Egyptian and Babylonian periods. It is doubtful if so extensive a treatment of the history is a profitable use of time and space in a book of this character. So much of our knowledge of the earlier civilizations rests upon scanty data that it is unwise to express positive opinions about them. An examination of Dr. Molinari's statements shows that claims are made for discoveries that are hardly so well established as to form basis for argument as to the development of science in those days. The interpretation of the Confucian philosophy in terms of modern ethics is rather rash.

One hundred and thirteen pages are devoted to an exposition of the principles of modern chemistry, especially the physico-chemical features which bulk so largely now in all text-books and teachings of the science. While even in this field the critic may doubt the wisdom of the introduction of such matter, it can be said that it is well done and the perusal of these pages will be of much use to the beginner in chemistry.

Turning to the main feature of the book, the description of industrial processes in the inorganic field we find a very large amount of interesting and valuable data. The classification is by elements beginning with hydrogen and following with groups mainly in the now fashionable order of the periodic system, but broken here and there on account of special relationships. Thus, the so-called "noble" gases are taken up in connection with nitrogen on account of their regular existence in the atmosphere. In this connection it

is to be noted that the author gets wrong on the helium bibliography (as every one else seems to do) for he says that "N Lockyer" discovered it in the solar chromosphere in 1867. It was in 1868 that J. N. Lockyer saw a line near but not identical with the sodium lines while examining the spectrum of a solar prominence. Reference is made to Palmieri's observation of a peculiar line in the spectrum of material from Vesuvius, but no mention is made of Hillebrand's experiments on cleveite. It is to be regretted that no mention is made of the peculiar application of helium as a substitute for hydrogen in dirigibles and the large amounts of the gas that were obtained in the United States for use in Europe, just prior to the armistice, but doubtless the time has been too short for the incorporation of such details.

It will not be possible in the space available to present in any detail the merits of the book. The amount of information it contains is very large. The translation appears to be well done, and the translator has very wisely made an occasional note when he feels that the author's statement has lost its value by the progress of discovery or he has accidentally erred. An interesting footnote on the effects of forests on rainfall states that on the island of Malta, the replacement of forests by cotton areas has caused the rainfall to be often deficient, while the afforestation of St. Helena has increased the annual rainfall to three times what it was when the "little corporal" was the resident.

Dr. Molinari's book deserves the success it has had for the first edition was soon exhausted, and it constitutes a valuable addition to library of both the teaching and works chemist. H. L.

THE PROFESSION OF CHEMISTRY. By Richard B. Pilcher, Registrar and Secretary of the Institute of Chemistry of Great Britain and Ireland. Constable Hall & Co., Ltd., London, England.

"When a boy turns a room—probably his bedroom—into a laboratory and starts making experiments the results of which are commonly obnoxious to the other members of his home, and when the household is startled by explosions and the smell of sulphuretted hydrogen penetrates to his father's study the question immediately occurs to the parent, 'How can the boy become an analytical chemist?' Afterwards he learns that the adjective *analytical* is too restrictive, but we will deal with that later."

The foregoing quotations from the preface of this book gives an idea of its purpose.

The author, who is a well known English authority, gives a synopsis of the education and training recommended for the profession of chemistry; beginning with preliminary education and leading up to a description of the requirements for admission into that ancient and honorable body known as the Institute of Chemistry, a Fellowship in which is one of the highest honors that can come to a chemist.

The book is divided into the following general headings:

A. *Education and Training:*
   1. General education.
   2. Matriculation or Preliminary Examination.
   3. Technical training.
   4. Qualification (including degrees in course).
   5. Higher qualification (including post-graduate degrees).

B. *Possible Careers for a Chemist:*
   1. Consulting practice.
   2. Industrial practice.
      Analytical.
      Research.
      Works control.
      Consulting technological.
   3. Official chemical appointments.
   4. Teaching.
   5 and 6. Combinations of the foregoing.

A very interesting chapter in the early part of the book is concerned with the discussion of the differentiation between pharmacists and chemists, for in England the pharmacists are usually called chemists whether they possess any specialized training along that line or not. The confusion in terms is explained by the author who contributes some interesting historical data in connection therewith.

In the chapter on Professional Training, the following paragraph will find unqualified approval among teachers of chemistry:

"The sciences with which a chemist must be acquainted are to connected and so enlighten one another that it is impossible for him to obtain a competent knowledge of any one branch without an acquaintance with at least the fundamental principles of several allied branches. Though he has comparative mastery over one

science he will find the study of that obscure if he neglects others, and these, though subsidiary, should be pursued to such an extent that the knowledge acquired is real and useful. The man with a smattering is found to be a source of danger in his profession, while he contributes to the crowding out of the more competent. The trained technical man's bag of tools is his brain; the tools consist of the departments of knowledge he is able to exercise; the better he is able to use them by the aid of his 'common sense,' the more successful is he likely to be in practice; the broader his training, the better his equipment."

Under Professional Organizations, the author declares: "Membership should be sought, therefore, from a desire to assist in maintaining the prestige of the profession generally as much as for any direct advantage to the individual."

Much that is of interest and value will be found throughout the book which deserves a careful perusal. The concluding chapters are along constructive lines and are headed: Chemistry and the State, Teaching, Women in Professional Chemistry, and Chemists in War. The book is well indexed and should find a place in every chemist's library. C. H. L.

FOOD INSPECTION AND ANALYSIS FOR THE USE OF PUBLIC ANALYSTS, HEALTH OFFICERS, SANITARY CHEMISTS AND FOOD ECONOMISTS. By Albert E. Leach, S.B. Revised and enlarged by Andrew L. Winton, Ph.D., 4th edition. John Wiley & Sons, Inc. $8.50.

This valuable work, used both as a working manual and as a reference book by food officials, who usually refer to it simply as "Leach's," is always welcomed in a new edition, for there are so many changes and improvements in methods and so much valuable data is constantly accumulating that a book of this type should be revised at least every five years.

The present new (4th) edition has been increased in size by 90 pages over the previous edition. This in reality means a much greater increase in new matter, for the bibliographical notes at the end of each chapter have been eliminated entirely, as they were by no means complete and were frequently misleading.

Space has also been gained by the discontinuance of a large amount of tabulated matter in Chapter 2 of the 3d edition, on reagents.

A chapter on the hydrogen ion concentration and its determination

by means of electrical apparatus, by Professor Gerald L. Wendt, has been added and constitutes a valuable new feature of the work.

It seems hardly necessary to go into a detailed description of the valuable features of the book, for it has come to be recognized as authoritative in its field and to combine descriptions of analytical methods with comparative data of composition in a comprehensive manner, which has never been attempted in any other work of this kind.

There are some disappointing features in the present revision, however, which should be mentioned, in the hope that the next revision, which should now be in course of preparation, will be free from certain defects that have been carried through from earlier editions, and that some important omissions may be supplied.

On page 968, under Copper in Vegetables, it is stated that "In the Massachusetts market labels like the following are not uncommon: 'This package of French vegetables contains an equivalent of metallic copper, not exceeding three quarters of a grain.'" The foregoing statement certainly has not been true for some years past, nor can the following statement regarding saccharin, on page 969, find support in fact at the present time: "Saccharin is claimed to possess antiseptic powers and is used in canned goods, but its primary purpose is as a sweetener."

The following statement on page 1014 is another instance of careless editing: "Caffein, extract of cola leaves, and cocaine are ingredients of proprietary syrups and beverages." It is news to learn that cola *leaves* are used for this purpose and rather remarkable that no mention is made of the antinarcotic act in connection with cocaine, which has long since disappeared from use in beverages, if indeed, it ever were present in appreciable amounts.

Under Nut Butters the only data given are on two brands common in England but not known in this country and no mention is made of any American brand whatever.

More complete data and a more comprehensive discussion of the subject of vinegars is extremely desirable, especially of glucose and molasses vinegars and in the interpretation of results on apple cider vinegars.

The egg substitute section is by no means up to date. The latest references seem to be to products examined in 1895 and no mention is made of the fifty or more brands which were on the market

as long as four or five years ago, data concerning which are available in numerous official publications, both State and National.

It would be extremely desirable to have a chapter devoted to canned soups, and miscellaneous canned products so abundantly used nowadays. Also more complete figures are desirable in connection with canned vegetables and fruits, in order to properly interpret results, particularly with reference to relative proportions of liquids and solids.

Although the vitamines are not capable of even approximate analytical determination at the present time in a practical way, it is surprising that this new and important group of food accessories is not even mentioned.

Notwithstanding these few drawbacks, the book is one which is indispensable to the practicing food analyst or food expert and should be in every reference library as well. C. H. LAW.

FOOD POISONING AND FOOD INFECTIONS. By William G. Savage.

This recently issued volume of the valuable list of scientific publications, issued under the name of the "Cambridge Public Health Series," is both timely and important. It contains 241 pages and is well indexed. Food poisoning in the popular mind and to a certain extent even among physicians and chemists, has been a curious jumble of fact and fallacy in which the newspapers have made bad matters worse by their unintelligent use of such terms as "ptomaine" and the encouragement of the belief that it is the metallic substances present that usually cause the unfavorable symptoms sometimes attributed to tinned foods.

The chapter headings which give one an intelligent idea of the value and comprehensiveness of the book are as follows:

1. Introductory and historical; 2, food as a vehicle for transmitting bacterial diseases; 3, foods inherently poisonous; 4, food idiosyncrasy; 5, the clinical and general features of out breaks of food poisoning; 6, the Gaertner group of bacteria in relation to food poisoning; 7, food poisoning of unspecific bacterial origin; 8, certain special kinds of food poisoning; 9, botulism; 10, sources and methods of infection in food poisoning outbreaks; 11, chemical poisons in food, unintentionally introduced; 12, chemical poisons deliberately added to food; 13, the prevention of food poisoning outbreaks; 14, methods of investigation of food poisoning outbreaks.

Bibliographic references are freely given. It is strange that no

mention is made, among the poisonous plants enumerated, of the oxalic acid containing sorrel and rhubarb leaves which several times within the past few years have been alleged to have caused serious toxic effects when eaten.

In the chapter on chemical preservatives frequent references are made to the U. S. Food and Drugs Act and the decisions of the Referee Board, and the author criticizes the policy of inaction which has hitherto guided the British authorities upon the subject and makes a number of suggestions which are of constructive value.

The book is one which should be in every medical and chemical reference library and will be found useful as well by health officials who are frequently confronted with puzzling cases of alleged food poisoning. CHARLES H. LAWALL.

A CRITICAL REVISION OF THE GENUS EUCALYPTUS. By J. H. Maiden, I.S.O., F.R.S., F.L.S. (Government Botanist of New South Wales and Director of the Botanic Gardens, Sydney). Vol. IV. Parts 9 and 10.

These two parts constitute Parts XXXIX and XL of the complete work of this important classic monograph. These continue the same style and presentation of the subject matter as the preceding parts. Part XXXIX is the treatise on the following species of Eucalyptus: *E. Torelliana* F.v.M.; *E. corymbosa* Smith; *E. intermedia* R. T. Baker; *E. patellaris* F.v.M.; *E. celastroides Turczaninow; E. gracilis* F.v.M.; *E. transcontinentalis* Maiden; *E. longicornis* F.v.M.; *E. oleosa* F.v.M.; *E. Flocktoniæ* Maiden; *E. virgata* Sieber; *E. oreades* R. T. Baker; *E. obtusiflora* DC; *E. fraxinoides* Deane and Maiden.

Part XL considers the following species: *E. terminalis* F.v.M.; *E. dichromophloia* F.v.M.; *E. pyrophora* Benth; *E. lævopinea* R. T. Baker; *E. ligustrina* DC; *E. stricta* Sieber; *E. grandis* (Hill) Maiden.

The artistic illustrations that have been so characteristic of these monographs are likewise continued in the parts now before us. The data associated with the descriptions are of material commercial value, as well as botanical monographs of the highest type.

G. M. B.